

THE SCOTTISH GEOGRAPHICAL MAGAZINE



Volume 75, No. 3.

December 1959

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THE ROYAL SCOTTISH GEOGRAPHICAL SOCIETY
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THE ROYAL SCOTTISH GEOGRAPHICAL SOCIETY

1884—1959

EARLY DAYS OF THE SOCIETY

DONALD G. MOIR

The Royal Scottish Geographical Society was formed at a public meeting in Edinburgh in October, 1884, and in October, 1959 completed seventy-five years activity. To mark the occasion a Reception was held in the Music Hall, George Street, Edinburgh, on October 22nd, with H.R.H. Prince Peter of Greece and Denmark as the principal guest. The Council invited the Honorary Secretary, Mr Donald G. Moir, F.R.S.G.S. to recall the events which led to the founding of the Society, and its early activities; it was also resolved to publish with this article a list of the Society's Office Bearers since 1884.

Seventy-five years ago new discoveries were being announced almost every day about some part of the world. Near at home the Alps had but recently attracted climbers and there were still many virgin peaks. In America the westward surge of immigrants was rapidly adding details to the map, and a transcontinental railway had been started to open up Canada. The major features of Australia were known but the map still showed great unexplored areas to be filled in. Interest, particularly on Scotland, was above all centred on Africa, where the journeys of David Livingstone and Joseph Thomson, both Scotsmen, had shown how little was yet known of that vast continent. Polar exploration had not even begun, although Waddell and Ross had charted part of the Antarctic seas. Along with a keen interest in the new discoveries was the growing awareness of the need for scientific geography, for at that time there was not a single Professor of Geography in Britain, although Germany had thirteen Professors and twenty-six Geographical Societies and France had twenty-four Societies.

In this atmosphere, with Scotsmen taking leading parts in explor-

ation, the proposal for a Scottish Geographical Society received wide support. The proposal originated with John George Bartholomew, at that time a young man in the family firm of John Bartholomew and Son, and there is in the Society's possession a silver matchbox presented to him on which is engraved: "Scottish Geographical Society: North Berwick: July 20th 1884". This refers to a meeting on that date at the house of Mrs Livingstone Bruce (daughter of Dr Livingstone) who, as might be expected, took a very active interest in the project. Preparatory work continued throughout the autumn and the Scottish Geographical Society was launched at a public meeting in the hall of the Chamber of Commerce at 11 Melbourne Place on the 28th of October 1884, when Sir George Harrison, Lord Provost of Edinburgh, presided over "a large and influential audience". The names mentioned in the report of those present include Sir George Campbell, M.P., Professor Calderwood, Professor Geikie, General Graham, James Currie, H. J. Younger, Dr Clyde, Dr Moir, Dr George Smith, W. C. Smith, R. Cox of Gorgie, Adam Black, publisher, John Bartholomew, A. L. Bruce, T. C. Jack, W. Scott Dagleish, R. Turnbull, A. Thomson, Headmaster of George Watson's Ladies College, Ralph Richardson, W.S., David L. Lowe, Heriots Hospital, John Gulland, Charles Cowan of Westerlea, Joseph Livingstone, A. Buchan, Secretary of the Scottish Meteorological Society, Walter Berry, Dr Lowe, J. McLaren and J. Thin, bookseller.

Professor James Geikie moved "That this meeting, recognising the scientific and general utility of a national society for the promotion of Geography, resolves that a Scottish Geographical Society of Scotland be now formed". This was cordially approved and the first office bearers were then elected: President — The Earl of Rosebery; Vice-Presidents — The Duke of Argyll, the Duke of Sutherland, the Earl of Wemyss, the Earl of Aberdeen, the Earl of Glasgow, Lord Forbes, Lord Balfour of Burleigh, Lord Reay, Lord Polwarth, Admiral Sir Alex Milne, J. B. Balfour, Lord Advocate, Dr D. Milne Home of Milnegraden, John Cowan of Beeslack, Colonel H. Yule, and Professor James Geikie. J. G. Bartholomew was appointed interim honorary secretary and A. L. Bruce of Edinburgh and Robert Gourlay of Glasgow, interim honorary treasurers.

Following these came the names of fifty members of Council drawn from a wide area and including in addition to many Edinburgh citizens Dr W. G. Blackie, James Grahame, C.A., A. B. McGregor, LL.D., Thomas Muir LL.D., Professor Robertson and Sir W. Thomson, all of Glasgow; George Burnett, Alex Laing, LL.D. and Principal Peterson of Dundee; and Professor James Donaldson of Aberdeen. The time had not yet come for ladies to hold office, although from the first ladies were admitted to membership of the Society.

In the prospectus issued after the first meeting of Council on the 31st of October, the aims of the now Society were outlined: "It is one of the first objects of the Scottish Geographical Society to advance the study of Geography in Scotland; to impress the public with the necessity and inestimable value of a thorough knowledge of geography in a commercial, scientific, or political education; so that its importance and utility may be fully recognised, and that it may attain the position due to it as an essential branch of education in the higher schools and

universities, such as it has long held in the universities of the Continent. Besides promoting geographical education, the Society will direct its attention to the encouragement and assistance of exploration in unknown countries, especially in those which give promise of interest to science, or hold out good prospects as fields for commercial enterprise. It will collect and publish periodically such geographical information as may prove of practical use and interest to scientific men, merchants, missionaries, intending travellers and emigrants. In short, it seeks to promote the science of geography by adding to its stores, arranging and systematising its results, and setting forth the utility of its study".

Through the influence of Mr and Mrs A. Livingstone Bruce it had already been arranged that H. M. Stanley should come specially to Edinburgh from Berlin, where he was attending the Congo Congress, in order to give the inaugural address to the new Society on the 3rd of December in the Music Hall in Edinburgh. Mr Stanley, who spoke on "The Congo", received a great ovation on his appearance on the platform, which in honour of the occasion was occupied by a distinguished platform party, including Mr Joseph Thomson, African explorer and a member of the Society. After the lecture there were calls on Mr Thomson for a speech, but all he would say after thanking Mr Stanley was that African travelling was more conducive to development of muscle than to fluency of speech. Lord Balfour of Burleigh, who presided, spoke of the more than successful start of the Society; it had been thought that the membership might in time reach 500, but in fact it already exceeded 700.

Next day a large gathering saw Mr Stanley open the Society's first Rooms at 80A Princes Street. He referred to the objects of the Society and spoke of his return to Britain in 1872 from his meeting with Livingstone, and of the unbelief and scepticism with which his story had been received in England, contrasting this with the reception he had just received in Edinburgh and the wide interest now shown in the development of Africa. He continued: — "Now, gentlemen, here is a very young Society that we are about to launch forth. It starts full of hope and full of spirit. Whenever Scotsmen take hold of a thing earnestly, I am told it is bound to be successful. I do hope that the Society which Scotmen have taken in hand at this time is bound for a very vigorous course, and that it will abolish all this localism, all these little petty jealousies, all this carping criticism to which I have referred. And if a man comes among you with a budget of geographical facts, for gracious sake don't ask him of what nationality he is, or of what religion he is, but welcome him as a person who has come among you to tell you what you want to know. You are quite in order in subjecting him to a criticism in a mild manner, in order to put down anything that savours of John de Mandeville, or any of those stories that grew up occasionally between the fifteenth and the nineteenth centuries. But don't discourage him.... Gentlemen, I consider it a great honour to be received in this manner today to consecrate these rooms to geographic science. By the responsibility invested in me, by the power with which I am now delegated, I declare these Rooms opened."

Mr Stanley was the guest of honour at a complimentary banquet

in the Waterloo Rooms on the 6th of December. He said he had not prepared a speech, and then spoke of previous visits: "Six years after Livingstone entered into Africa I came to Edinburgh and told the good people here that I had found Livingstone. Some believed me; some didn't. I was told that some people used to button-hole one another in the street, and ask "Do you believe that fellow Stanley found Livingstone?" In fact, it was an anxious question for years. Six years after that I again came, and I told you that I had found a large, capacious, and ample basin, endowed with the richest gifts of nature. Did you believe me then? Not a bit of it. You derided me as usual. You button-holed one another in the street again, and you said, "Do you believe all that fellow Stanley has said?" (Laughter). And now I have come to tell you that that rich, capacious, and ample basin has really been made a State — consecrated by united Europe to your free commerce. Are you going to button-hole one another in the streets and ask, "Is this true what that fellow Stanley said?" I think I shall invent some kind of thermometer, or something of that sort, to mark the degrees of public favour that meet me when I find myself coming to Edinburgh. Just look, the other day in London, for the discovery of Livingstone I got a bland fascinating smile — for crossing Africa I had two fingers. Perhaps for securing for England a large free commercial dominion in Africa I shall have a whole hand. I have never forgotten, nor will I ever forget, the sad feeling that came over me as I parted with the old man (Livingstone) in 1872, and how each of us would have liked to stay longer. As I dropped his hand, and saw the departing form, a presentiment came over one that I should never see him again, and still there was the hope that I would, because he was stout in form, he was firm of will, he was resolute in determination. Perhaps I hoped, I prayed — if an earnest wish can be called a prayer — that he would have been preserved, and still there was the dread fear. As I was coming down the Congo, with only the Atlantic Ocean for my goal, I thought many a time of the cheering words he used to tell me, how one day the attention of Europe would be directed thither. Somehow or other these dreams perpetually haunt me. I seem to see through the dim, misty, warm, hazy atmosphere of Africa always the aged face of Livingstone urging me on in his own kind, fatherly way. "Don't you think, Mr Stanley," he would say, 'that some day there is a hope for this old Continent? Don't you think that some day the people of Europe will be awakened to what really is in Africa?' Then Stanley proposed the toast of the Society and concluded: "What can I say more except to wish long years of useful existence to the Scottish Geographical Society. I do hope with all my heart that the Society will not forget their countryman, Mr Thomson, and that if they have got any severe or dangerous mission to explore, they will send Mr Thomson".

Mr Thomson, in reply, lamented the fact that the romance had gone out of African exploration; that Mr Stanley was now wandering about in the Congo, loaded with cotton goods and Birmingham ware, and that if this sort of thing were to go on he would prefer to go to North Pole, and be done with Africa.

On the 6th of December Mr Stanley travelled to Dundee, where a branch of the Society had been formed on the 26th of November in

the Albert Institute by the election of a local Committee consisting of Principal Paterson, Convener, Rev. Colin Campbell, Rev. D. M. Ross, Dr Adam Wilson, Captain Clayhills Henderson, Captain Scott, Commander Grove, Major Urquhart, Mr E. Cox, Mr Weimburg, Mr George Burnett, and Mr William Kerr. The Committee, along with the Lord Provost and leading citizens, met Mr Stanley at Dundee station, and after a banquet in his honour heard him lecture in the Kinnaird Hall to the Dundee Branch of the Society on "The Congo, its past history, present development, and future commercial prospects".

Mr Stanley next visited Glasgow and after being entertained to dinner in St Enoch's Hotel by Lord Provost McOmie, Mr Gourlay (Joint Hon. Treasurer of the Society) and others, on the 8th of December gave an address in the St Andrew's Hall to mark the inauguration of the Society in Glasgow. The Earl of Rosebery, President of the Society, presided over a crowded gathering, the platform party at this lecture including Lord Provost McOmie, Alexander Crum, M.P., J. C. Bolton, M.P., Charles Tennant, M.P., and most of the Professors from the University.

Two months later, on the 4th of February 1885, an Aberdeen Branch was formed at the close of a lecture given by Mr H. O. Forbes on his recent travels in the East Indian Archipelago and on his projected expedition to New Guinea. Mr David Stewart was elected local Chairman, with Professor Donaldson, Professor Pirie, Mr Webster, M.P., Mr William Yeats, Mr William Keith and the Rev. George A. Smith, as members of Committee, to which were later added Lord Provost Henderson, Dr Beveridge, Mr John Crombie, Rev. Bishop Douglas, Mr William Ferguson, with Mr Andrew Walker as local Hon. Secretary.

Encouragement of exploration was one of the Society's objects, and the first grant was made in February 1885 to a member of the Society, Mr H. O. Forbes, for his proposed expedition to New Guinea. Members were invited to contribute and altogether £500 was handed to Mr. Forbes, increased subsequently by grants from other bodies. Though unsuccessful in his main object of ascending Mount Owen Stanley, Mr Forbes surveyed and mapped a large area of country between the Owen Stanley range and Port Moresby.

Increasing membership and increasing work made it clear that a full-time Secretary was needed, and in February 1885, the Council appointed as Secretary and Editor, Mr A. Silva White, who had spent many years abroad in the Diplomatic Service.

The Glasgow Branch of the Society is mentioned in April 1885 without any definite date being given for its formation. Arrangements for the inaugural lecture in Glasgow by H. M. Stanley had been made by Mr Robert Gourlay, the Joint Hon. Treasurer, with assistance from the Glasgow members of Council. A proposal subsequently received from the Geographical Section of the Glasgow Philosophical Society for joint meetings resulted in the first joint meeting taking place on the 3rd of April, when a paper by Mr H. H. Johnston on "Eastern Equatorial Africa" was read. These joint meetings were discontinued at the end of 1887. The names of the Society's Glasgow Committee, as first recorded towards the end in 1885 are: Mr Renny Watson, Convener; Dr G. A. Turner, Hon. Secretary; Mr Robert Gourlay, Hon. Treasurer;

Dr. W. G. Blackie, Mr Wm. Clark, Sir Michael Connal, Mr Henry Dwyer, Mr Leonard Gow, Dr A. B. McGregor, Dr Thomas Muir and Mr George Smith.

A *Scottish Geographical Magazine* was one of the primary aims of the founders of the Society. The first number was prepared under the charge of the Hon. Editor, Mr H. A. Webster, the work proceeding simultaneously with a discussion on whether it should be a monthly or quarterly magazine. It was decided to have a monthly magazine, but as it was then February the first number was issued as Nos. 1-3, January to March 1885. Thereafter the magazine appeared with regularity, providing the members with an average of sixty-four pages of reading once a month. In the first eight numbers the major articles were all on some aspect of Africa, beginning with H. M. Stanley's inaugural address on "Central Africa and the Congo-Basin", indicating the intense interest taken by Scotsmen in Africa at the time. An article on the place names of Kinrossshire began an interest in Scottish place names which has been maintained ever since; another article on what remained to be done for the geography of Scotland pointed out the need for surveys in different fields and for a third *Statistical Account of Scotland*. A map of Australia has large areas marked "unexplored"; a map of Greenland shows part of a coastline but a completely blank interior; and a sketch map of the Canadian Pacific Railway is followed by a note that it was still uncompleted.

There was still plenty of scope for exploration throughout the world; in showing a special interest in the Antarctic the Society was maintaining a Scottish tradition which dated from the days of the Dundee whalers and had resulted in Scottish names being given to the South Shetlands, Weddell Sea, and other places. The Council at an early meeting resolved "to support any movement having for its object the careful exploration of the Antarctic Regions, as being certain to result in large and important accessions to our knowledge in oceanography, meteorology, and other branches of physical science", and went on to propose that the Governments of Australia, New Zealand and Tasmania should be invited to co-operate with the British Government in an expedition in view of its imperial character - a plan not realised until 1956. The subject was actively discussed by the Council, and the Magazine kept members abreast of all news knowledge of the Antarctic, until in 1902, in default of a larger scheme, Dr W. S. Bruce, one of the Society's members, carried out the Scottish National Antarctic Expedition.

During the first year seven lectures were given in Edinburgh, four in Glasgow, two in Dundee and two in Aberdeen. For the opening lecture of the second session the Council invited Lieut A. W. Greely, who had recently returned from surveys in Greenland, where, through a relief ship failing to arrive, he and his party had experienced great hardships and only seven survivors of the original twenty-three had been rescued. He lectured to large audiences in Edinburgh, Glasgow, Dundee and Aberdeen, and was made an honorary member of the Society.

With a lecture programme and the Magazine now well established the Council formed an Education Committee to consider what could

be done to improve the method of teaching geography, not only by the establishment of Chairs of Geography in Universities, but also by the teaching methods in schools. It was decided to start by offering prizes to teachers for the best essays "On the Best Method of Teaching Geography in Elementary Schools", to be followed later by an examination, open to all school pupils in Scotland, on "Geographical Terms and the Interpretation of Maps", on the basis of a syllabus prepared by the Committee, and to raise a fund of £250 as a special Education Fund to carry out these and other proposals.

At the end of the second year the Society had 1088 members — 585 in Edinburgh, 253 in Glasgow, 104 in Dundee, 64 in Aberdeen, and 82 scattered throughout the world.

In 1887 permission was received from the Queen to add the word, "Royal" to the title of the Society. Following this, the Diploma of Fellowship was instituted and Dr Hugh Robert Mill was elected the first Fellow of the Royal Scottish Geographical Society. The year 1887 also has the first mention of lectures being illustrated with "limelight views"; Joseph Thomson, a frequent speaker, in 1889 gave a lecture on "Explorations in the Atlas Mountains" with limelight views from his own photographs.

In 1886 the Council was greatly concerned about the danger to Emin Pasha, governor of the Equatorial Province, then the most southerly part of the Sudan. He had been appointed to this post by General Gordon, whose death at Khartoum in an attack by the Mahdists was still fresh in men's minds, and the picture of a Governor at bay in the far Sudan defying the victorious Mahdists roused keen interest in the Society. The Council held special meetings to urge on the Government the need for a relief expedition, and actually prepared plans for an expedition which they were ready to carry out if the funds promised by other bodies and individuals were made available to the Society for the purpose. This was not necessary; a Relief Committee with Mr William Mackinnon of Balinakill, (a Vice-President of the Society) as Chairman, persuaded H. M. Stanley to lead the expedition. He arrived at the mouth of the Congo in March 1887, and after almost insurmountable difficulties reached Emin Pasha in April 1888. Remaining with Emin for a time he continued his journey eastward and reached Zanzibar in December 1889. This epic journey of two-and-a-half years across Africa, when he discovered the Mountains of the Moon, resulted in Stanley's great book, *In Darkest Africa*. After a short stay in Egypt Stanley came to Scotland in 1890 to lecture to the Society on his journey. He asked his audience to remember that since he arrived at the Indian Ocean last December he had not been able to call one hour not devoted to sleep his own, but though anxious for rest and a holiday he thought that the Royal Scottish Geographical Society deserved his visit. He added that three-fourths of the contributors to the relief fund were Scotsmen — two members of Council had each given £500.

Stanley was received in Scotland like a national hero. His tour began with a banquet in his honour by the Society on Monday the 9th of June in Edinburgh. On the 10th, after opening the Society's new Rooms, he received the degree of Doctor of Laws from Edinburgh University, and in the evening lectured to the Society in the Synod Hall, where

he was presented with the Society's Gold Medal, awarded for the first time. On the Wednesday, he received the freedom of Edinburgh, and then travelled to Glasgow to attend a banquet given there by the Society. Next day he was given the freedom of Glasgow, and in the evening lectured to the Society in the City Hall. On the Friday he travelled to Dundee to lecture in the Kinnaird Hall and on the Saturday received the freedom of the city. Finally on the Monday he lectured in the Music Hall in Aberdeen and on the Tuesday was given the freedom of Aberdeen.

The new Rooms opened by Stanley formed part of the new National Portrait Gallery in Queen Street and had the advantage of not only providing more space for the increasing library of books and maps but also the use of a lecture hall in the same building. At the opening ceremony Stanley made a short speech: "It is nearly six years since I was in Edinburgh before to inaugurate certain rooms which were to be devoted to the use of the Scottish Geographical Society. Since then you have made a great deal of progress. You have added the word "Royal" to your title. Very probably you will have, in a few years, the word "Imperial". Since then you have contributed considerably towards the opening up of the Dark Continent. Certainly I do not think there is any young society in the world can point to a record of work such as this Society has done; for very probably if it had not been for the warm interest taken by this Society in Emin Pasha, it is likely that Emin Pasha would still have been at Wadelai, if not at Khartoum. Two members of your Society, I may say, contributed £1000 to the funds of the Emin Relief Expedition. It was a small portion, it is true, of the sum ultimately devoted to the relief, but every little counted. There was about £32,000 spent. I hope that this year is only the beginning of another year of progress. I hope the next time I come to Edinburgh I shall find you possessed of a house of your own. There are a great many generous people in Scotland, and when they take hold of a thing they do it with all their might, in order to accomplish what they have begun. One of the guarantees of the success of these African projects is that they are mainly in the hands of Scotsmen — the African Lakes Company and the British East Africa Company — and I feel sure that they will not let go their work until they are absolutely compelled by their own Government. By the permission given me by your Chairman and you, I hereby declare these rooms formally open for the Royal Scottish Geographical Society".

By the end of 1891 the Society had seventy members in London, and they presented a petition requesting the Council to form a London Branch. As the signatories included the Marquis of Lothian, the Secretary of State for Scotland, and a Vice-President of the Society, the Marquis of Tweeddale, another Vice-President, and Mr G. J. Goschen, Chancellor of the Exchequer, it was a request which could not be refused, and the Council consented to a branch being formed in London with the Marquis of Lothian as Chairman, the Hon. C. G. Hay as Hon. Secretary, and with a lecture hall at 20 Hanover Square. The inaugural address was given on the 4th of April 1892 by Professor James Bryce who lectured on "The Migrations of the Races of Men, considered historically". The second lecture had quite far-reaching

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effects. The Royal Geographical Society invited Mrs Isabella Bishop, whose travels in Kurdistan and Tibet had created considerable interest, to lecture to its members, but as the Royal Geographical Society still barred ladies as members, Mrs Bishop preferred to give her lecture to the London Branch of the Royal Scottish Geographical Society of which she was already a fellow. This had two results: first, the R.G.S. altered its Rules to admit ladies, and Mrs Bird became the first lady Fellow of the R.G.S.; second, the R.G.S. offered members of the R.S.G.S. (and of other geographical societies) who were resident in London the privilege of attending all the R.G.S. meetings and of using their library and map room for reference purposes. The offer was accepted, and as it gave the R.S.G.S. members in London greater benefits than could be provided by a branch of the R.S.G.S., the London Branch, which now had membership of 105, was closed down in July after a life of only four months.

LIST OF OFFICERS AND RECIPIENTS OF MEDALS 1885 - 1959

PRESIDENTS

1885-1891	The Earl of Rosebery, K.G., K.T.
1891-1894	The Duke of Argyll, K.G., K.T.
1894-1898	The Marquess of Lothian, K.T.
1898-1904	John Murray, K.C.B.
1904-1910	James Geikie, D.C.L., LL.D., F.R.S.
1910-1914	The Earl of Stair
1914-1916	The Duke of Buccleuch, K.T.
1916-1919	Lord Guthrie, LL.D.
1919-1925	Lord Salvesen, P.C.
1925-1930	The Viscount Novar, K.T., G.C.M.G.
1930-1934	The Lord Elphinstone, K.T.
1934-1937	Lord Polwarth, C.B.E.
1937-1942	The Earl of Rosebery, K.T.
1942-1946	D'Arcy Thompson, Kt., C.B.
1946-1950	Alan G. Ogilvie, O.B.E.
1950-1954	John Bartholomew, M.C., J.P., F.R.S.G.S.
1954-1958	Douglas A. Allan, C.B.E., LL.D., F.R.S.G.S.
1958-	The Earl of Wemyss and March LL.D.

TRUSTEES

1884	Adam Black, Robert Cox of Gorgie.
1891	James Currie, John Cockburn, F.R.S.E.
1895	Robert Cox, James Currie, James A. Wenley.
1899	James Currie, James A. Wenley, Prof. S. H. Butcher, LL.D., D. Litt.
1902	James Currie, Prof. S. H. Butcher, F. Grant Ogilvie, James R. Reid, C.I.E.
1903	James Currie, F. Grant Ogilvie, James R. Reid, Wm. C. Smith, K.C.
1909	James Currie, F. Grant Ogilvie, Wm. C. Smith, Sir Colin G. Macrae, W. S., Capt. D. Livingstone Bruce.
1915	James Currie, F. Grant Ogilvie, Sir Colin G. Macrae.
1916	James Currie, F. Grant Ogilvie, Sir Colin G. Macrae, J. D. Monro, James Cornwall.

- 1920 Sir F. Grant Ogilvie, J. D. Monro, James Cornwall.
 1922 Sir F. Grant Ogilvie, James Watt, W.S., Robert S. Allan, LL.D.
 1925 Sir F. Grant Ogilvie, James Watt, Robert S. Allan, James Currie, J. D. Monro.
 1930 James Watt, Robert S. Allan, J. D. Monro.
 1932 James Watt, J. D. Monro.
 1937 James Watt, J. D. Monro, Theodore E. Salvesen, F.R.S.E., F.R.S.G.S.
 1941 James Watt, Sir Robert Greig, LL.D., F.R.S.E.
 1943 James Watt, Sir Robert Greig, Robert Grant, F.R.S.E.
 1944 Sir Robert Greig, Robert Grant, D. Alan Stevenson, M.I.C.E., John Bartholomew, M.C., J.P.
 1946 Robert Grant, D. Alan Stevenson, John Bartholomew.
 1959 D. Alan Stevenson, John Bartholomew, Wm. Latimer, George S. Russell.

CHAIRMEN OF COUNCIL

- 1910-1916 John Horne, LL.D., F.R.S.
 1916-1919 Col. Sir Duncan A. Johnston, K.C.M.G., C.B., R.E.
 1919-1923 H. M. Cadell, D.L.
 1923-1926 Professor J. Y. Simpson, D.Sc.
 1926-1930 Sir Everard im Thurn, K.C.M.G., K.B.E., C.B.
 1930-1933 James Watt, LL.D., W.S.
 1933-1937 Principal J. Cameron Smail, O.B.E.
 1937-1941 Professor J. Ritchie, D.Sc.
 1941-1944 Douglas Guthrie, M.D., F.R.C.S.E.
 1944-1947 Robert Grant, J.P., F.R.S.E. (*Office discontinued*)

HON. SECRETARIES

- 1884-1920 John George Bartholomew, LL.D.
 1884-1923 Ralph Richardson, W.S.
 1920-1950 John Bartholomew, M.C.
 1925-1941 Professor Alan G. Ogilvie, O.B.E.
 1944- Donald G. Moir, F.R.S.G.S.
 1954- John C. Bartholomew, M.A., F.R.G.S.

HON. TREASURERS

- 1884-1893 Alexander L. Bruce
 1893-1899 John Cockburn
 1899-1902 J. R. Reid, C.I.E.
 1902-1904 William C. Smith, K.C.
 1904-1930 James Currie, M.A., LL.D.
 1931-1937 David Callender, C.A.
 1937-1939 William Williamson, F.R.S.E., F.L.S.
 1939-1945 W. O. Leitch, F.R.S.E.
 1945-1952 D. Alan Stevenson, M.I.C.E., F.R.S.E., F.R.S.G.S.
 1952-1958 J. Allan Brown
 1958- A. A. Bremner

HON. LIBRARIANS

- 1884-1890 William C. Smith, LL.B.
 1891-1895 John Gunn, F.R.S.G.S.
 1895-1898 David MacRitchie
 1898-1915 J. Burgess, C.I.E., LL.D., F.R.S.E.
 1915-1918 John Gunn, D.Sc.
 1918-1943 John Mathieson, F.R.S.E., F.R.S.G.S. (and Map Curator)
 1943- Charles A. Malcolm, O.B.E., Ph.D., LL.D., F.R.S.E.

SECRETARIES

- 1884-1892 Arthur Silva White (and *Editor*)
 1892-1904 Lt-Col. Fred Bailey, R.E. (and *Editor*)
 1904-1905 Lieut E. H. Shackleton, R.N.R. (and *Treasurer*)
 1905-1910 Major W. Lachlan Forbes (and *Treasurer*)
 1910-1925 George G. Chisholm, M.A., B.Sc., LL.D.
 1925-1948 George Walker, F.R.S.G.S.
 1948-1953 Captain (A) J. F. W. Hawkins, R.N. (Retd.)
 1953 J. D. M. Smith, C.M.G.
 1953- S/Lr. Brian K. D. Robertson, A.F.C., R.A.F. (Retd.)

EDITORS

- 1894-1900 W. A. Taylor, M.A., F.R.S.E. (and *Librarian*)
 1900-1902 George Sandeman, M.A.
 1902-1934 Miss Marion J. Newbigin, D.Sc.
 1934-1936 Miss H. G. Wanklyn, M.A.
 1936-1939 Miss L. R. Latham, B.A.
 1944-1954 John H. Kenneth, Ph.D., F.R.S.E., F.R.S.G.S.
 1954- Miss Joy Tivy, B.A., B.Sc., Ph.D.

HON MAP CURATORS

1884-1890	John C. Bartholomew, F.R.S.E.
1891-1902	Frederick Bosse
1902-1918	Colonel James Sconce
1918-1940	John Mathieson, F.R.S.E., F.R.S.G.S.
1940-1946	Farquhar C. Macdonald
1946-1949	Alexander R. Normand, M.A., B.Sc., Ph.D., F.R.S.E.
1949-1951	Colonel T. E. Durie
1951-	John C. Bartholomew, M.A., F.R.G.S.

TREASURERS

1909-1916	Patrick A. Blair, C.A.
1917-1921	David Callender, C.A.
1921-1941	Sir T. B. Whitson, LL.D., C.A.
1941-1946	Alexander Harrison, C.B.E., C.A.
1946-1956	Samuel C. Clapperton
1956-	A. F. Morse, C. de G.

RECIPIENTS OF SOCIETY'S MEDALS

Livingstone Medal

1901	Harry H. Johnston, G.C.M.G., K.C.B.
1902	Sven Hedin
1903	Robert E. Peary
1904	Robert F. Scott, C.V.O.
1905	Archibald Geikie, Kt., D.C.L., LL.D., F.R.S.
1906	George D. Taubman Goldie, P.C., K.C.M.G.
1907	The Viscount Milner, G.C.B.
1908	The Lord Avebury, P.C., D.C.L., LL.D., F.R.S.
1909	Ernest H. Shackleton, K.C.V.O.
1910	John Murray, K.C.B.
1913	E. R. C. R. Evans, C.B.
1915	The Earl Kitchener, K.G., G.C.I. E., G.C.S.I., G.C.B., G.C.M.G., K.P., O.M.
1916	Douglas W. Freshfield, D.C.L.
1921	Frederick M. Bailey, C.I.E.
1924	Marion I. Newbiggin, D.Sc.
1925	Roald Amundsen
1926	The Viscount Allenby, G.C.B., G.C.M.G., K.C.B.
1927	Isaiah Bowman
1928	Alan J. Cobham, K.B.E.
1930	Wilfred Grenfell, K.C.M.G.
1932	Bertram Thomas, O.B.E.
1936	F. Kingdon Ward
1939	Rt Hon. Lord Hailey, K.C.S.I., K.C.I.E.
1943	Mildred Cable
1943	Francesca French
1943	Eva French
1944	N. E. O'Dell, Ph.D.
1947	Einar Mikkelsen
1950	Alan G. Ogilvie, O.B.E.
1951	Eric Shipton
1953	John Hunt, Kt. C.B.E., D.S.O.
1953	Edmund Hillary, K.B.E.
1955	Charles Evans, F.R.C.S.
1956	John Bagot Glubb, K.C.B., C.M.G., D.S.O., O.B.E., M.C.

Scottish Geographical Medal

(Formerly Society's Gold Medal)

1890	Henry M. Stanley
1897	Fridtjof Nansen
1904	William S. Bruce
1905	Francis Younghusband, K.C.I.E.
1906	Albert, Prince of Monaco
1908	Sven Hedin
1910	James Geikie, D.C.L., LL.D.
1911	J. Y. Buchanan, F.R.S.
1912	Roald Amundsen
1913	Albrecht Penck
1915	J. Scott Keltie, Kt. LL.D.
1919	The Earl Haig, K.T.
1923	J. W. Gregory, F.R.S.
1924	Hugh Robert Mill, D.Sc.
1927	John Mathieson, F.R.S.E.
1933	The Lord Meston, K.C.S.I.
1944	James M. Wordie, B.Sc.
1945	H. J. Fleure, D.Sc.
1954	John Bartholomew, M.C., J.P., F.R.S.G.S.
1958	Vivian Ernest Fuchs, Ph.D.

Society's Medal in Silver(Up to 1909, thereafter *Universities Medal*)

1892	F. D. Lugard, C.B., D.S.O.
1892	Joseph Thomson
1897	Sven Hedin
1897	Robert E. Peary
1900	Carl Chun
1900	Adrien de Gerlache
1900	C. E. Borchgrevink
1903	Otto Sverdrup
1903	H. J. Mackinder, M.A.
1904	Thomas Robertson
1905	Robert C. Mossman
1905	G. H. D. Ryder, D.S.O.
1905	St. Hill Gibbons
1906	W. M. Ramsay, Kt., D.C.L., LL.D.

Society's Medal in Silver (cont.)

- 1908 George Chisholm, M.A., B.Sc.
 1908 A. Trolle
 1909 Jameson B. Adams
 1909 Eric P. Marshall
 1909 Frank Wyld

Society's Medal in Bronze

- 1897 Otto N. Sverdrup
 1897 F. H. Johnson
 1900 Adalbert Krech
 1900 Georges Lecoq
 1904 D. W. Wilton
 1904 R. N. Rudmose Brown, D.Sc.
 1904 J. H. Harvey Pirie, B.Sc., M.D.
 1904 W. A. Cuthbertson
 1904 Alastair Ross

Mungo Park Medal

- 1930 Angus Buchanan, M.C.
 1931 Frank S. Smythe, F.R.G.S.
 1934 Isobel W. Hutchison, LL.D.
 1935 Freya Stark
 1936 Lawrence R. Wager

- 1939 E. B. Worthington, Ph.D.
 1944 F. Fraser Darling, D.Sc.
 1947 F. Spencer Chapman, D.S.O.
 1949 Mary G. Henry
 1950 Thor Heyerdahl
 1951 William H. Murray
 1953 Eigil Knuth
 1954 Alain Bombard
 1955 George Christopher Band
 1955 Thomas Dempster Mackinnon

Research Medal

- 1931 Jules de Schokolsky, D.Sc.
 1932 John L. Myers, D.Sc.
 1933 Edward Heawood, M.A.
 1936 Clement Gillman
 1937 Alexander Bremner, D.Sc.
 1939 H. J. Fleure, D.Sc., F.R.S.
 1944 Alan G. Ogilvie, O.B.E.
 1946 Marcel Aurousseau
 1949 Alexander Stevens, M.A., B.Sc.
 1954 The Rev. James I. Macnair, D.D.
 1956 Gerald Roe Crone
(designations as recorded in past issues of the Scottish Geographical Magazine)

GEOGRAPHY AT THE BRITISH ASSOCIATION

1959

The 121st Annual Meeting of the British Association for the Advancement of Science was held, from Wednesday the 2nd to Wednesday the 9th of September, in York, the city of the Association's foundation in 1831.

Section E was most fortunate in being housed in St John's College and in being looked after by Mr R. O. Smith the Senior Lecturer in Geography. All meetings of the Section were well-attended; and for the address by its President, Professor K. C. Edwards of Nottingham, on the Friday morning, well over 250 were present.

Professor Edwards spoke on "Trends in urban expansion", demonstrating with great clarity the acceleration and nature of this expansion during the past fifty years. He concluded: "The insistent demands by an increasing proportion of the world's inhabitants to share the advantages of urban life occurs at a time when science and technology are especially prodigious in conferring material benefits. It should not, therefore, prove beyond the capacity of human wisdom eventually to re-shape the urban environment in a manner which will make it more than ever an instrument for social betterment." It was appropriate that this address should be followed by a paper by A. G. Powell, one of the President's former pupils, now Senior Research Officer in the Ministry of Housing and Local Government. Mr Powell reviewed the developments in "The expansion of London" since the Barlow Report and provided a most interesting demonstration of the changed conditions in which planning decisions have now to be made.

As is customary, the first morning of the Section programme was devoted to

papers of local interest: R. O. Smith discussed the influence of the site and location of York on the City's growth; J. A. Patmore (*Liverpool*) examined the changing functions of Harrogate as a resort; and Dr H. C. K. Henderson (*London*) and D. I. Scargill (*Oxford*) were concerned with aspects of the industrial and urban geography of the West Riding. These papers were followed in the afternoon by well-conducted excursions within the city and district of York, led by R. O. Smith and M. Kirk (*Leeds*).

The first part of the lecture programme was completed on the Friday afternoon by a joint session with Section K (Botany) on "Coastal erosion and coast protection." The subject was introduced by Professor J. A. Steers (*Cambridge*); Dr M. C. Pearson (*Nottingham*) spoke on "The biology of the Sea Buckthorn"; R. K. Gresswell (*Liverpool*) discussed the erosion and protection of the Lancashire coast; and C. Kidson (*Nature Conservancy*) and G. Cole (*Ministry of Agriculture and Fisheries*) examined the value of certain plants in shore stabilisation.

Field excursions occupied the week-end period, and their rich variety added emphasis to the advantages of York for a meeting of this kind. On the Saturday parties visited the North-east Yorkshire Moors (G. de Boer, *Hull*) and the West Yorkshire industrial area (G. C. Dickinson, *Leeds*). Sunday's excursions covered the Yorkshire Dales (G. R. J. Jones, *Leeds*) and the Vale of Pickering, Northern Holderness and the Northern Wolds (A. Harris, *Hull*).

The Monday was devoted to a symposium on "Land use surveys of the World". This was introduced by Professor L. Dudley Stamp and completed by a discussion to which contributions were made by Professor S. van Valkenburg (*Clark University, U.S.A.*) and Professor J. Macdonald Holmes (*Sydney*). Four of the papers were concerned with Africa: C. Board (*Swansea*) reported on a land-use survey carried out in the East London locality of Cape Province; M. Brunt (*Directorate of Overseas Surveys*) described his work on land use and vegetation in the Gambia; W. D. Clayton (*Kew*) gave an account of a vegetation survey in Nigeria; and V. C. Robertson (*Hunting Technical Services Ltd.*) presented an admirable summary of the methods and objectives of a preliminary survey of 12,000 square miles in the Western Sudan intended to explore the possibilities of water conservation and irrigation development. R. G. Miller (*Directorate of Overseas Surveys*) spoke on "Surveys of forest resources", describing recent advances in technique and their results.

The Section Dinner, held by tradition on the Monday evening, was well-attended and was arranged most successfully in the ancient Hall of the Merchant Taylors. The guests included Professor Dr Carl Troll, Director of the Institute of Geography in the University of Bonn, Professor and Mrs S. van Valkenburg and Professor J. Macdonald Holmes.

On the Tuesday morning the centenary of the deaths of both Alexander von Humboldt and Carl Ritter was commemorated by a comprehensive review of the work of these founders of modern geography, given in a stimulating address, in English, by Professor Troll. There followed an examination of the first twenty-five years of the T.V.A. by Professor W. B. Fisher (*Durham*) and a description of "Highway development and geographical change in the U.S.A." by Professor B. J. L. Berry (*Chicago*). In the afternoon the programme of excursions was completed with a study of the Howardian Hills (Dr S. R. Eyre, *Leeds*), an interesting examination of the railway geography of the area to the south and south-west of York (J. H. Appleton, *Hull*) and a physiographic study of the Western Wolds (G. de Boer and A. Harris).

The meeting ended on the Wednesday morning with four papers: Dr G. T. Warwick (*Birmingham*) discussed "The limestone regions of Britain and their morphological development"; Miss M. Bower (*Birmingham*) reported on a survey of peat erosion in the Pennines; E. Derbyshire (*Keele*) described the achievements and plans of the McGill Sub-arctic Research Laboratory at Knob Lake in Quebec-Labrador; and B. E. Coates (*Sheffield*) discussed the distribution of parks in the West and East Ridings.

William Birch

THE INFLUENCE OF DAVID LIVINGSTONE ON SUBSEQUENT POLITICAL DEVELOPMENTS IN AFRICA

JOHN STEWART DUNLOP

IN many of its aspects the political development of Africa is unique. The uniqueness lies not in its late colonisation — there are other lands equally late in development — but in the peculiar circumstances which it afforded, and which were not reproduced to the same extent in any other area of the world. By comparison, the political development of, say, North America was a relatively simple affair. In the first place there was an almost empty continent. There were clear-cut factors of 'pull' — rich agricultural land and mineral wealth. Similarly there was an increasing and often dissatisfied population on the east coast, some of whom responded to the elements of 'push'. The mechanics of settlement were thus essentially straightforward. Though a thorn in the flesh to the frontiersman, native Indians were not a great problem on the political level since their economy did not require the whole land surface of the continent. For the time being they were allocated reserves, and the problem rather solved itself through the decline of their numbers as time went on.

The picture in Africa has always been different. In the first place native civilisations were more developed numerically. Taking their agricultural technique as given, they had reached the state at which there was a very approximate equilibrium between the population and the land area. Again in contrast to America, the native civilisations have shown no signs of dying out since the advent of the white man. The larger part of Africa has always proved itself to be Black Man's territory.

There are other aspects to the uniqueness of African colonisation. When Livingstone arrived in 1841, only the coastal fringe together with a considerable area at the Cape were effectively known — and rather less effectively settled. The major rivers were virtually unknown, the only penetration of any significance being that of the Portuguese on the Zambesi as far as Tete, 300 miles from the ocean. The remainder of the Continent, south of the Equator at least, was unknown. It is true that odd snatches of information together with many fables had filtered through from the interior via the slave routes, but the impressions so gained by the outside world usually served to distort rather than to elucidate the African story. The picture was of wild peoples with strange customs, and engaged in constant warfare, the chief object of which seemed to be the selling of their neighbours into slavery. It is not unnatural that the typical outsider, knowing nothing of Africa save that which was 'noised abroad', should have become excessively conscious of the great difference in standards between African culture and his own. It was against this tradition of the African as 'sub-human' — or at least inferior human — that Livingstone began his work.

There was another external factor which complicated African

development. Not only was colonisation late in coming to that Continent, but when it did come competition amongst European powers carried the process through much more quickly than would otherwise have been the case. This competition was partly for prestige purposes and partly to secure sources of raw materials for European industry as well as markets for the finished produce. In the case of Britain, although this 'imperialism' was largely carried through by private enterprise, as will be discussed later, the effect was much the same. Put briefly, it was that Africa, so long unheeded, became the object of an undignified scramble which thrust together in the space of a few years two civilisations more than 2,000 years apart, in the hope that these two would be able to achieve a working relationship from the start, which also would be on White terms. Even had the rate of colonisation been adapted to the African tempo of life, the problem would have been hard enough. Speeded up as it was by external forces, the colonisation of Africa at once became overloaded with racial problems which in turn dominated political development. In these various factors lies the uniqueness of African settlement — a background which must be understood before the influence of David Livingstone can be assessed.

Political development, narrowly conceived, may be thought of as the actual dividing of land into its various political entities, which in turn can be reproduced on the political map by clearly defined lines separating the one area from the other. Moreover, each of these areas has its separate government and institutions which develop in independent ways. But just as history is more than a catalogue of wars and dynasties, so political development is more than a knowledge of maps neatly drawn in different colours. The effects in other words, cannot be understood without reference to the causes. Nowhere is this more true than in Africa where the human complexity overshadows an apparent physical simplicity. Admittedly there were problems on the land. For example, the soil of large areas turned out to be much less fertile than had been supposed. Nevertheless, the real problems in the development of Africa lay in the new human relationships to which European colonial policy gave rise.

Political development in Africa may then more properly be regarded as the history of the outworking of this essentially human problem. This process, of course, eventually culminated in the formation of colonies and protectorates, though the boundaries between such were often ill-defined — a reflection of the native situation in which two tribes were jealous of their own central territory but uncertain about the ownership of the zone of 'no man's land' between them. The causes of Africa's political development, rather than the effects, seem, however, to be of major importance in the light of the peculiar human problems involved.

The distinction is of great significance in assessing the influence of Livingstone, who never carried the imperialist flag nor envisaged the founding of empires. Nevertheless, if the claim of many writers is true, that he more than any other man has influenced men's thoughts about Africa and Africans, this influence may be expected to make itself felt in the political sphere as well as elsewhere. It remains to consider — in some detail — how this came about.

The influence of Livingstone was to some extent indirect, since he was not a "planter of the flag". But it was indirect in another sense. At his death he had by no means achieved his aims. The slave trade, that "open sore of the world", had not finally been declared illegal, though this happened very soon afterwards. The geographical problems, which occupied so large a part of his later life, had not been solved. Finally, he had not seen, as he had hoped, the opening up of Central Africa to trade and commerce. In these respects there can be little doubt that he died a disappointed man. If there was any room for negative thinking in a character such as his, he may have wondered at this time whether his efforts would prove to be of any great effect at all. Yet, his death was necessary to complete his work — in more senses than one. No words, perhaps even no deeds, could have underlined the ambitions of his life as did his death. For the ultimate effects of his work one has to look far beyond his time.

Several elements may be distinguished in the purpose behind Livingstone's life: — the preaching of the Gospel, the opening up of Africa for commerce, the establishment of geographical truth, and, perhaps above all, the abolition of the slave trade. No one of these elements may be considered in isolation. They are completely interdependent. But at the same time there can be no doubt that heathenism and the slave trade stood out in his mind as being the twin curses of Africa; the slave trade because it stood for injustice, oppression and cruelty; heathenism because, quite apart from being so contrary to the Faith in which Livingstone implicitly believed, seemed also to have the power to drag the African down to the lowest depths of vice, fear and ignorance. By the constant wars and primitive social structure which they produced, both stood in the way of the development of Africa.

Here one might note a certain presupposition which was common in Victorian Britain; the idea that Britain had a sort of 'mission to the world', that she with her supreme endowments should seek to foster less developed lands. This would be done by the spreading of British technique and British culture, which after all had proved so successful in the home country. It is no criticism of Livingstone to say that, to some extent, he shared in this attitude of his time. He was not so extreme as Rhodes in this respect, and he certainly did not treat the Africans as inferiors. Nevertheless, although he was conscious of the great needs of Africa by *any* standards, he felt that the answer lay in the application of something essentially British. Concerning agriculture, he wrote of the good effects that could be wrought by a hundred good Scottish farmers. Linked, therefore, with his humanitarian concern for Africa was the idea that British penetration was the best means of development.

If Livingstone's two greatest aims may be summed up as the overthrow of slavery and heathenism, together with all the social evils which they stood for, the achievement of these was to be attained by the introduction of something positive — "commerce and Christianity". His efforts, under these two themes, have given rise to certain political effects.

The Frere Treaty of June the 5th, 1873, marks the official end of slavery in Zanzibar, the chief slave port. The slave market there was

for ever shut down, though small quantities of smuggling of slaves continued along the East African coast. The political implications of this Treaty are considerable when it is realised that, although the trade was focussed on Zanzibar, slaves were drawn from a very large area of the interior. Formerly the 'economy' of much of the land round the Lakes was directed towards the export of slaves. After the Treaty the slave wars, in which stronger tribes had preyed upon their weaker neighbours, were a little less frequent, though the repression of such enmity amongst peoples so long accustomed to chronic disorder involved a high cost in European casualties. Interior Africa was, therefore, left as a sort of vacuum into which colonists easily stepped. It is interesting to note that legitimate trade in this case was not the cause of the abolition of slavery. In so far as commerce did occur, it came rather as an effect. The immediate cause of the Treaty was a well-timed piece of 'dictatorial diplomacy' on the part of the British Government.

Many people had worked towards what proved to be an economic revolution in East Africa: — Sir Bartle Frere, John Kirk and others in the British Government. But they were working largely on evidence which they received from the man who first revealed the full atrocities of the slave trade. Livingstone's writings on it were not passionate, so much as straightforward and factual. Within a decade of his arrival in Africa he had formed one of the cardinal principles of his policy — that "if the slave market were supplied with articles of European manufacture by legitimate commerce, the trade in slaves would become impossible". So he wrote in 1851. It was better, he thought, to prevent the trade at its beginning, rather than to try to put a stop to it at any of the subsequent steps.

In order to be effective, however, this policy required the opening up of trade routes from the interior of Africa to the coast. This was one of the main ideas which he sought to spread during his first visit home in the years 1856–1858. This conclusion had been confirmed in his mind as a result of his early exploration of the Zambesi Valley. At this time he was optimistic concerning its prospects. The native population along the banks was fairly dense, minerals were present and the soils appeared to be fertile. It was perhaps unfortunate that his first visit home took place before Livingstone discovered the real truth about the Zambesi. In England his reports, backed up by personal encouragement, stimulated much enthusiasm over the idea of 'developing Africa'. This was notable in the case of Manchester cotton manufacturers — Livingstone's former trade — but considerable interest was also shown by the government, particularly Palmerston and Clarendon who were willing to lay at his disposal for a second journey much greater financial resources than his small missionary income had previously provided.

The government went further, however, in that they appointed him Consul of "the Eastern Coast of Africa", a post which Livingstone accepted on condition that he should be allowed to retain his freedom to act as a missionary. This political appointment accords well with the growing importance of the commercial aspects of Livingstone's policy. No doubt he had begun to think more in political terms. Yet this approach can only be considered as the means to an end and not as the end itself.

Livingstone had reached the stage of thinking in terms of introducing to the African a more moral and commercial way of living, but there is no evidence that his plans for the Zambesi Expedition went any further.

It was only when he returned to Africa that Livingstone was able to make a correct assessment of the Zambesi as a trade route. The Kebrabasa Rapids, which he knew of but had not seen before, proved to be an unsurmountable barrier, while other features of the river, particularly at its mouth, were hardly less difficult to overcome. Moreover, the passing of time revealed that African soils were generally much less rewarding than the rank natural vegetation had led many — apart from Livingstone — to believe.

Two effects quickly followed: the British Government, anxious not to burden their overseas commitments, and with an insight which Livingstone at this particular moment seemed to lack, decided that the Zambesi was not an economic proposition in the immediate future and recalled the Expedition. The second effect was even more significant. Livingstone had created widespread interest among English business men. He had helped, by his letters as well as by his visit home, to create the idea that Africa was a great economic force, which required only development. The ease with which such an attitude spread in Victorian Britain has already been pointed out. The idea took such firm root that it has been common to apply the word "underdeveloped" to Africa ever since. This atmosphere helped to produce Cecil Rhodes and others who played such a large part in the Partition of Africa. The fact is that Livingstone had seriously over-rated Africa, and to some extent had caused others to do likewise.

It should be stated in defence of Livingstone that, as time went on, he became more and more aware of the natural poverty of Africa. "Commerce and Christianity" could not be achieved without the penetration of a European community who would first educate the Africans in new methods of agriculture and hygiene. A revolution in African society had to be achieved without which trade could not properly be successful. It is hard to believe, however, that this new policy could have been effected without some attempt at political annexation. In fact, there is evidence that Livingstone had, a little belatedly perhaps, come to realise this. A private letter to Sedgwick after his second journey revealed his "hopes of a colony" in the high lands to the south of Lake Nyasa. Indeed, after the Zambesi failure, his discovery of this lake and the Shire Highlands may have altered his ideas to a considerable extent. Here at last he had found an area in which the white man could settle with reasonable comfort and in close proximity to Africans. Moreover, although he always defended the idea of the inherent equality of all men, Livingstone states at this time that the European section of society should act as a managerial class, being unable to compete with the natives as labourers. He saw the need, in other words, for a certain functional division — entailing settlement and tutelage — before the commerce, which he still thought essential to undercut the slave trade, could be properly established.

One further interesting point emerges from the opening up of the Shire River. Slave traders were quick to take advantage of his work to extend the sphere of their activities. Hence there was an additional

reason for an influx of British settlers, who, if they were given some political control, could stem the increasing tide of slavery much more effectively.

Livingstone's policy of combatting slavery by commerce has, therefore, been a factor in political development, since the slave economy, when abolished, had to be replaced; this could only be done by Europeans prepared to give the Africans the education and protection which they required; perhaps most of all there was the reaction of Livingstone's reports upon a mission-conscious home community.

It was stated earlier by way of generalisation that, in Livingstone's eyes, the twin curses of Africa were slavery and heathenism, which could be overcome by the introduction of "commerce and Christianity". The political implications of the first point have been dealt with. Turning to the second, one realises that the different aspects of Livingstone's policy cannot properly be separated. Many of the above points were aimed at the overcoming of heathenism just as much as at the suppression of slavery. But the political implications of two main aspects of Livingstone's life and work remain to be considered. They are the missionary settlements, and the Christian attitude to the native epitomised by Livingstone.

The missionary settlements have particular importance in what is now Nyasaland. A month after the funeral of Livingstone, James Stewart of the United Free Church of Scotland put forward a plan for a Mission which would be "of an industrial as well as an educational nature". This was after the plan of Livingstone himself. Under Robert Laws this plan was put into operation and played a great part in the development of Nyasaland. The Established Church of Scotland also sent out a Mission to be centred on Blantyre in the Shire Highlands. Within three years the "African Lakes Company" had been set up to supplement these Missions on the commercial side. Settlers, however, were few in number, with the result that there was not so much displacing of natives by Europeans as in Southern Rhodesia. In Nyasaland Livingstone's ideas came closest to achievement. It has also proved to be the area of most successful race relations prior to the African Federation, though it, too, has had its own particular problems. An official report of 1953 states, "Nyasaland is Livingstone's country".

The final aspect of Livingstone's life to be considered is that which concerns his attitude to the African. The foregoing paragraphs have attempted to trace the political effects of some of the more obvious points of Livingstone's policy. These, in many cases, have been of an indirect nature but not so remote as to render the connection unlikely. This final field of enquiry, however, by its very nature, does not allow quantitative assessment, but to omit it altogether would be to disregard a notable aspect of Livingstone's life, and one which greatly influenced subsequent political leaders.

A clash of ideals was almost always present in the colonisation of Africa. There were those who sought ultimately to assimilate the native at the white man's level; there were those who sought to keep him in a state of oppression. Most people recognised the theoretical justice of the former; in practice many followed the latter. But the strength of the idealistic background in surviving the troublesome years of sett-

lement may be to some extent due to the example of its founders — in particular, Moffat and Livingstone.

The Christian approach of Livingstone quickly earned him the respect of the African, a fame that spread more rapidly than he himself could travel. Arriving at Zumbo on the Zambesi in 1856 and announcing his nationality, he was told, "You must be of the tribe that loves black men". On another occasion, as he travelled down the Zambesi for the first time, it is said that an old woman, seeing him, flung herself at his feet crying, "Give us rest, give us rest". In her cry Livingstone saw something of the cry of Africa.

Few European settlers, on the other hand, were able to understand the African. They had come from a society in which their own ideas had been well-tryed and proved successful. For two thousand years West European society had been in a state of development. Although degeneration and relapse had continually lurked just round the corner, as when the Roman Empire was waning, fresh influxes of people with new ideas and new technology had always saved the day. It was a society which had been well-mixed and blended by centuries of history.

The Africa to which these settlers came had evidences of more advanced society in the past, but something had gone wrong and the people had slipped back. Agriculture and social life were extremely primitive. To the Victorian mind the 'lobola' custom immediately reduced marriage to a type of conditional barter. Moreover, there seemed to be no idea of morality. Many detailed accounts of the apparent enjoyment with which Africans wallowed in cruelty and vice were written in these days. To kill a stranger was nothing, to kill a brother was an act of horror. There was no basis for tribal co-operation. Central Africa was a power vacuum in which no one had the strength or the will to enforce peace.

Ideas of assimilation were, therefore, virtually out of the question from the start. Livingstone, however, looked for the similarities of black and white — not the differences. In his writings he quotes an African chief, "... that we should not lie or kill or steal, oh yes, we knew that was wrong. But we still do all these things". In many ways, thought Livingstone, European morality "harmonised exactly with their own ideas of right and wrong".

Although Livingstone condemned in general terms the pagan life of native tribes, he always writes with great personal affection when dealing with individuals. This contrast may not have been fully understood by those viewing from a distance.

Another complexity was added by the attitude of other missionaries to the native. All too often Christianity was forced upon him complete with all its European trappings. Condemnation of such institutions as polygamy was often so absolute as to preclude any understanding of the social and economic structure which produced it. Sectarianism, together with frequent discrepancies between practising and preaching, must certainly have hindered understanding between the races. Moreover, many missionaries who followed Livingstone were not so independent as he, but clamoured for the colonial flag of protection.

Rather to the disgust of the European, the Bantu had little interest in regular employment since they had always eked out a living on a

freer basis. Their delight in any form of improvisation could seldom be of use in contact with a people who liked to reduce the element of the unforeseen and work by exact time-tables. Their superstitious nature made them attribute their own failures to the work of evil spirits. They had, therefore, no incentive to learn. Furthermore, taxes were quite unintelligible to them, since they could not see the alleged benefits of 'protection'. For example, many Mashona tribesmen expressed a preference for the old life of insecurity at the hands of the Matabele as compared with the new life of 'civilisation'.

It was no part of Livingstone's policy to impose upon the African institutions unacceptable to him. In fact, rather than dogmatise about Christianity, he was more content to live amongst the natives as a Christian, treating them as a Christian ought to. In the long run, this policy proved to be more effective. Dr Edgar Brookes concludes, "Christian Missions have represented the greatest conscious force for change operating upon the Bantu life".

This type of attitude to the African, in other words, has become an active force in shaping society. The effect of Christianity, too, has been to replace tribal parochialism by an outlook wide enough to accommodate all men, to encourage national rather than tribal feeling. It is a historic fact that practically all outstanding African personalities who have become national leaders are Christians, and owe the best in their lives to missionary influence and education.

One particular aspect of African development was not the result, in any sense, of Livingstone. While his early travels had drawn men's attention to Rhodesia, and his last journey and association with Stanley had led indirectly to the founding of Leopold's Empire in the Congo, the means by which these were acquired were in opposition to his ideals.

Rhodes, in his desire to extend British civilisation to Central Africa, came to regard his ends as so important that they justified means sometimes far from honourable. Like Livingstone, he recognised the strategic importance of Matabeleland and Mashonaland situated between the arid Kalahari and Kruger's Republic. This he described as the Suez Canal to the North. The succession of treaties which were forced upon Lobengula, King of these lands, was not worthy of the idealism which Rhodes is held to have inherited from Livingstone. The pace of colonisation was also being stimulated by the similar efforts of the Afrikaans and Germans, so that Lobengula knew that, in the face of superior strength, his kingdom's days were numbered. With peculiar insight he described himself as the Fly, upon which the Chameleon advanced step by step, until, at last, came the dart of the tongue. Despite the reality of this metaphor, there was always the appearance of scrupulous legality to those who were viewing from Britain.

It may be more than coincidence that Southern Rhodesia stands in contrast to Nyasaland in terms of the success of racial policy. The former was built upon the spaces created by the Matabele War, and into which the Europeans sought, on their own terms, to draw back the African. If Nyasaland before the Federation came closest to Livingstone's ideals, Rhodesia, particularly in the south, has been much less successful.

If, therefore, one must attribute much of the 'Scramble for Africa'

to the interest in that country which Livingstone's travels and writings aroused, he may certainly be excused when certain of the methods employed are considered.

Emphasis has been laid throughout on two important factors. Firstly, that political development in Africa has been a complex affair, only to be understood in the light of unique circumstances. Secondly, that the influence of David Livingstone, by reason of the very nature of his work, cannot be altogether of a direct political nature. But, taking these two considerations together, it can be seen that Livingstone's type of work would be likely to have a greater political effect in Africa than elsewhere.

Considered in this light, Livingstone's policy against slavery and paganism is seen to have more than immediate consequences. A new attitude to the racial question was being founded. The reason for the direction of the emphasis of this essay is that a full understanding of the Partiton of Africa would require a detailed study of the lives of such men as Cecil Rhodes and Sir Harry Johnston. The influence of Livingstone was not so much in the methods which these men used, as in the underlying attitudes to which they were heirs. If Livingstone's sphere of influence is thus established, there is justification for many of the claims made on his behalf. Quantitative assessment, however, remains as elusive as the direct answer to the continuing problems of African politics.

Pl. 2.

Fivepenny Borne is a crofting township on the west side of North Lewis, 9 miles south-west of the Butt. The subdued drift-covered topography is cut into by the Borne River to the north and the mouth of the river is off-set by a shingle bar. Low cliffs cut in the glacial drift line the coast above a wave-cut platform in the gneiss at high tide level. Blanket peat covers much of the surface. The name refers to the land-tax imposed by Norse invaders and settlement has probably been continuous since that period. The photograph covers Fivepenny Borne (*Bhaile Ard*) to the north. The main road demarcates inbye from common grazing, the small arable patches in the pasture being the visible effect of squatters in the crofting landscape. Peat roads lead off to the east. The linear crofting settlement contains both traditional black houses and recent white houses, the latter often two-storeyed. The 51 crofts in Fivepenny are linear strips from road to sea; the 14 remaining holdings are squatters, some at the south end of the township interspersed with the crofts, others on the common. The High Borne crofts consist of 4 non-contiguous strips. The present settlement pattern dates from the mid-nineteenth century. The cluster of ruins surrounded by an oval dyke (*sean bhaile*) is the sole survivor of 3 (4?) such groups dating from the preceding period. Traces of a track between two of the groups are clear and traces of a third group appear beyond the low end of the crofts in the centre. The land associated with these houses was held in runrig, while the upper limits of the present crofts were still peatbog. The remains of fish-curing houses of the same period are seen near the mouth of the river. The lay-out of the modern crofts dates to about 1886 but the shift in the settlement site was partly due to, and partly responsible for, the eastward extension of arable at the expense of peatland. Squatters are continuing this process of reclamation on the common. Since 1946 some houses have been moved to the roadside and two 50-acre fields have been reseeded on the common near the road. The arable is used for oats, potatoes and hay. Only one crofter now grows barley, common before 1935 when the grain was dried in small kilns (e.g. immediately outwith and east of the *sean bhaile*) and ground in small vertical-shaft mills on the river, traces of which remain. The small enclosed gardens are for vegetables. Peat cutting, past and present is evident on all parts of the common.

Pl. 1.

ST ANDREWS,
FIFE, FROM THE EAST

The commanding sandstone plateau, edged by a fifty-foot cliff and standing between two low-lying sandy bays, early formed an attractive site for Cathedral, Abbey and Castle, all perched on the cliff edge. Access from the west, by means of 'ports' (gates) and the three converging streets established the street pattern. Land was divided into 'rigs' and these persist in the gardens of the South Street houses. Dune land to the north has furnished ample space for four golf courses but fishing, formerly an important occupation, has declined in recent years as larger boats shun the rocky coast and small harbour.

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Pl. 2. Fivepenny Bove, Barvas Parish, Isle of Lewis
(for explanation see page 152)



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Date of photograph, October 1946. Scale approx 1 : 6,200. Road runs NNE-SSW from left to right.



Pl. 3.

Carl Ritter, aged about sixty-five, as Knight of the Order "Pour le mérite".
After a painting by Karl Begas, painted in 1844, the same year as the portrait of
Alexander von Humboldt shown in the previous issue of this magazine.

Photograph by permission of the Royal Geographical Society

CARL RITTER

1779-1859

KARL A. SINNHUBER

IN histories of the development of geographical thought, the name of Carl Ritter is invariably linked with that of Alexander von Humboldt. And very properly so. As pointed out in the preceding issue of this magazine, their work was so closely complementary in this 'classical' period of modern geography that for an understanding of subsequent developments neither can be viewed in isolation. The sequence of names occasionally implies a different degree of importance, or a dependence of Ritter on Humboldt, but here the article on Ritter is the second merely because Humboldt died a few months before Ritter, and these papers, intended as centenary tributes, logically adopt the same order.

Compared with Humboldt, Ritter's life ran much more smoothly. We look in vain for great explorations or diplomatic missions and yet, if we want to come anywhere near to an appreciation of his life's work, or even more specific, of the concept of geography which he held and propagated, the course of his life holds the essential keys. Looking back at it, every important event seems to have followed the one before in such a logical way, as if fate had planned for him an absolutely straight career. Although, therefore, a detailed and critical biography would be of paramount importance, the historians of geographical thought have always shied from this task. While there is a fair number of Humboldt biographies, of which some are very recent, in Ritter's case we still have to rely on the biography written by his brother-in-law, a theologian, supplemented by a briefer account by an American, seemingly also a theologian, a pupil of his in 1855 during the last years of his teaching.¹ True, there are also some short accounts, obituaries and memorial addresses by contemporaries²; there is F. Ratzel's biographic sketch,³ and there are a number of scholarly studies which began in 1929 on the occasion of the 150th anniversary of his birth;⁴ finally, there are some papers stimulated by the present centenary which have illuminated certain periods of his life. But all these, valuable as they are, are no substitute for a modern biography. Nevertheless they have brought out important new points and contributed greatly to a more adequate assessment of Ritter.

Carl Ritter was born at Quedlinburg on the 7th of August 1779, as the third son in a family of five sons and one daughter. The Ritters belonged to the esteemed burgher families of long standing in the town. Carl's father, Friedrich Wilhelm Ritter, had a medical practice and was well-known and liked in the town as a person as well as a doctor. A person who, in addition to his parents, exercised an early influence on Carl was J. C. F. Guts Muths, who had lived for two years as a member of the family while attending grammar school and who, after completing his university studies in 1782, rejoined the family as tutor.

Only two years later Carl's father died suddenly at the early age of thirty-eight; this was an extremely difficult situation for his widow with six children, of whom the eldest was just over ten years. In the same year, C. G. Salzmann had bought the little estate Schnepfenthal, near Gotha, to establish there a school, a Philanthropinum, to put his own ideas of natural education (based on Rousseau) into practice. To stimulate parents into sending their sons to his school, Salzmann decided to offer a free place to a suitable boy — and it happened that Carl was chosen. This was a first decisive step in Carl's life, increased in importance by the fact that Guts Muths, who had taken him to Schnepfenthal, was also offered a position there as a teacher. The educational aim of the Philanthropinum was to form the pupils into healthy, useful, kind and happy citizens; emphasis was given to scientific and technological subjects, nature studies, country walks and journeys further afield, and physical exercise. Carl was not an outstanding pupil but after initial difficulties of adjustment he fitted in well. Salzmann became to him a second respected father, while Guts Muths was his elder beloved friend who possessed his entire confidence. Guts Muths, who was his 'housemaster', taught him also in geography and, in a letter to Carl's mother, Guts Muths wrote in 1787 that it was a real pleasure to teach him in that subject, adding jokingly, "He makes great strides towards being a future professor of geography". That geography was no passing fancy appears clear from a further letter of Guts Muths in 1791 in which he wrote: "Carl's favourite subjects are geography and drawing...". Of all the pupils he drew the best maps and when the time approached to choose a career, Salzmann suggested to him the profession of draughtsman and engraver. Carl, though not completely averse to this career, had however for some time thought of going to university in order to become a teacher, an educator, like Salzmann and Guts Muths; the latter supported him in this plan and privately taught him some Latin to enable him to enter university, but Salzmann was at first very much against it and was still doubtful of its advisability when an opportunity arose which solved the problem of financing Carl's studies and thus decided the issue.

This opportunity came through a meeting with the Frankfurt banker and merchant, Hollweg, in 1795, a meeting which initiated the second formative phase of Ritter's life. Hollweg, who during the confused political conditions had found it advisable to take his family to safety at Gotha, met Ritter through a Frankfurt tutor, who with his charges had taken refuge at Schnepfenthal and become friendly with Ritter, then sixteen. Hollweg, favourably impressed with the educational methods of the Philanthropinum, saw in Ritter the opportunity for his two sons to profit by them. He offered to pay for Ritter's studies if he agreed to become tutor in his house subsequently. Nothing could have pleased Ritter more.

In the autumn of 1796 Ritter entered Halle University. Since he was to instruct his pupils in all subjects his studies (like Humboldt's) were based very broadly. None of the professors had individually an outstanding share in turning his mind into any particular direction. But he was genuinely thrilled by his delving into 'science' in the broadest sense.

After two years he left university and in October 1798 began as a tutor to the Hollweg sons, a task which was to occupy him for over fifteen years. The importance of this period in shaping his ideas, his acquisition of knowledge and his later position in life cannot easily be overestimated. Ritter's position in the house of Hollweg was not always an easy one, especially at the beginning. While he had the complete confidence of the master, he did not always see eye to eye with Madame, the daughter of the immensely rich banker, Simon Moritz von Bethmann, "the uncrowned king of Frankfurt". Gradually, however, he was able to gain her confidence also, and she turned to him to advise her when her husband died in January 1808.

Although to be tutor in such a wealthy house gave Ritter a way of life comfortable beyond his wildest dreams, he looked upon it only as a true vocation which he fulfilled with his entire personality, even to the extent of overtaxing his robust health. To keep well ahead of his pupils he studied intensely late at night. Any book he wanted was bought. Every lesson he prepared in writing and he established contacts with experienced teachers so as to improve himself for his task. When the time came for one of the boys to learn the ancient languages — which Ritter did not feel qualified to teach — he insisted that young Hollweg should attend the city grammar school so as to mix with people of lesser rank, and Ritter himself, then in his middle twenties, saw nothing strange in attending the school also, to make good his own deficiency in Latin and Greek.

Needless to say, being a tutor was to Ritter not confined to giving lessons. On the basis of his Schnepfenthal education it involved the moulding of the entire personality. More than once he threatened to leave when Madame Hollweg attempted to interfere with his educational methods and especially when she at first resisted his demand that the children should be brought up away from the parental house which, in his opinion, exerted an unfavourable influence on their character.

The social life in the Hollweg house in which he took part, but hating it, out of a sense of duty to show that a tutor was more than a mere employee, nevertheless had for him important consequences. He overcame his natural shyness so that later he was able to move at ease in any circles he entered, even the circle around King Frederick William IV. Through this social life he met a number of stimulating people, the most important of them probably Alexander von Humboldt who, after his return from America on his way from Paris to Berlin spent in 1807 a few weeks at Frankfurt. Ritter had "devoured" everything that Humboldt had written so far and when he met him he was much impressed. The statement sometimes found, that it was this meeting which made Ritter decide to become a geographer, is without foundation in fact.⁵ He also met there later Leopold von Buch, the celebrated geologist, and valued him even more highly than he had Humboldt.

It is clear that through his position Ritter had by the end of the eighteenth century become a well-known personality in Frankfurt. From 1802 onwards he began to publish short papers. Some dealt with questions of teaching as such, as his very first one "About the teaching of drawing", others were devoted to methods of geographical teaching and

some were by-products of his work on a geographical textbook on Europe.⁶ As a supplement to this he published in 1804-6 a series of six maps of Europe.⁷ The book had its good points, but taken as a whole it was very much the same as the usual geographical textbooks of that time. Definitely a new advance was the little atlas which in its sequence from mountain ranges, heights, wild plants, crops, animals to man shows how Ritter had grasped the interdependence of the distribution of the main geographical phenomena.

From this point on Ritter parted from the current geographical practices and theories. While he was as much against the compendia containing useful information of states as against the "pure geographers" who tried to impose preconceived ideas of natural divisions on nature, he was gradually finding his own way. By 1810, in a paper later forgotten but recently rediscovered,⁸ he stated for the first time his new thoughts on the nature of geography which are as relevant today as they were then. In a nutshell they run as follows: the study of geography is of educational value not for its usefulness but because it studies a phenomenon of nature, the earth's surface. This as a whole as in its parts shows an inherent plan, thus every detail is of importance. To find out its design will take infinite painstaking research and success will only come if the study is carried out without bias and no *a priori* systems are introduced from without.

What happened between the appearance of the second volume of his *Europa* and the paper of 1810 that enabled him to formulate this new concept of geography? It was a journey to Switzerland in 1807, carried out with his pupils, which had these revolutionary consequences. Two experiences made the deepest possible impression on him: to come face to face with untamed nature and to meet the great educational reformer, H. Pestalozzi, and his circle at Iferten. The former turned him from a rationalist towards a romanticist, the latter pervades all his subsequent work to a much higher degree than had been appreciated until recently. Also important is that on this visit to Iferten he became quite suddenly a deeply believing Christian while previously his faith, though Christian, had been governed by the ideas of the Age of Reason.

Back at Frankfurt he wrote a few papers about his visit to Iferten and Pestalozzi's method of teaching, but the main literary object that occupied him was work on a *General Geography*, fulfilling a promise to Pestalozzi to write a geography embodying his method. The work was completed but because of von Buch's advice unfortunately never published.⁹ It seems certain, however, that later on this manuscript formed the basis of his lecture course on General Geography at Berlin University.¹⁰

Apart from working on his *General Geography* Ritter was also active in other respects. He had become honorary secretary of a newly founded social and literary society at Frankfurt, "The Museum", an experience which proved useful practice for his later activities with the Berlin Geographical Society, founded 1828, of which he was a founder member and first and frequent president. To "The Museum" he also read papers on art, two of which were published. The paper on the antiquities of Cologne shows a keen appreciation of Gothic architecture and is the

first example of the literature of the history of art. Nevertheless even these papers must be seen part of his geographical writings.

Ritter's main task, however, was still as tutor in the Hollweg family. Although the elder son had left his care in 1808 and gone into his father's business, Ritter had to prepare the younger son and his friend Sömmering for entering university. The last stage in this was to be a prolonged stay abroad. Geneva was chosen and the two years there were also to be of great significance. In exploring the countryside — he walked round the Mt Blanc Massif — and in contact with many people, amongst them Pictet and Saussure, he gained immensely, but most important was his friendship with J. G. Ebel, a physician who had written a number of works on Switzerland. To him Ritter owed the inspiration of his concept of the geographical region.¹¹

A journey to Italy was to conclude his tutorship. After a long stay in Rome, Naples and travels in the south, they returned to Germany in June 1813. There they were caught up in the upheaval of the of the Wars of Liberation. Naturally Ritter's and August Hollweg's urgent desire was to be part of this great national movement. Equally naturally Hollweg's mother, after the loss of her elder son, did not wish to see her now only son exposed to the dangers of war. The only way to make him stand aside was to persuade Ritter to stand aside also. It was a difficult decision for Ritter to take but he made this sacrifice which he felt he owed to Madame Hollweg and accompanied August Hollweg to Göttingen University. This decision meant that he had the rare opportunity as a mature man with great knowledge to come back to a university for private studies. Almost free from duties with an excellent library at his disposal and with sufficient means, he could now systematically deepen his knowledge and begin to write his great work, his *Erdkunde*, or *General, Comparative Geography*.¹² Its first volume appeared in the summer of 1817. It was an immediate success; reviews called it an "epoch-making work" which raised geography to the rank of a science (*Wissenschaft*).

Ritter, not unknown before, was now almost famous. He was asked to take over the directorship at Schnepfenthal, of Pestalozzi's school, to become the princesses' tutor at the Court of Weimar, and to join the staff of a number of well-known grammar schools. The universities of Göttingen and Bonn considered offering him a chair.

In 1818 Ritter had become engaged to Lilli Kramer (they married in November 1819) and he accepted the post of history master at the city grammar school at Frankfurt, the town to which he was linked through so many memories and friends. But his stay was to be only brief. Upon the recommendation of Freiherr von Stein, Wilhelm von Humboldt and top level military men like Clausewitz and Gneisenau, he was offered a geographical professorship at Berlin University and at the Royal Military Academy. In September 1820 he moved to Berlin.¹³ No other German city could have been better suited for carrying out his plans, and for developing him finally into what he is to us today.

His duties in Berlin were many and varied. His lectures at the university, where in succession to A. Zeune he was "professor extraordinarius" (he was appointed "ordinarius", i.e. given a chair, in 1825),

were at first the least demanding. No students came in the first year. The year after the number was moderate but then increased steadily until he had audiences of three to four hundred. These numbers kept up throughout his entire career and thousands in every conceivable branch of the professions must have been given something of a general geographical education.¹⁴ Amongst his pupils who made names for themselves were: the Swiss A. H. Guyot, who later as professor at Princeton did much to spread Ritter's ideas in the United States; the Russians A. P. Jefremov and P. P. Semenov "Tanshansky", the former sometime lecturer at Moscow University, the latter important as translator of Ritter's work on Asia and for his work in the Russian Geographical Society and as an explorer; and most important of all, E. Reclus, the founder of the new geography in France; of his German pupils the most important were the historian, E. Curtius, E. Kapp and G. B. Mendelssohn, later professor at Bonn University. F. von Richthofen, who attended Ritter's lectures during the last years, cannot be called his pupil in a strict sense.

But Ritter's personal influence as a teacher is not limited to the students whom he enthralled in the University lecture theatres. Having taught from 1820-1853 in the Military School and from 1825-31 as Director of Studies in the Prussian Cadet Corps, a great number of Prussian Officers of 1866 and 1870-1 were equally his pupils; the most famous of them were A. von Roon and Field Marshall Helmut von Moltke.¹⁵

Ritter's capacity for work was enormous. In 1822 he was elected member of the Berlin Academy of Sciences where he read papers from time to time;¹⁶ he was asked to instruct Prince Albert of Prussia in history and the Crown Prince invited him not infrequently to deliver discourses in the Royal Palace. In 1825 his teaching obligations were twenty-five hours per week.

His happy marriage was childless but, until the death of his wife in 1840, he acted as foster father to children of friends and relations, and took them into his house. The reason for attempting so much was that throughout his life he remained first and foremost a teacher in the broadest sense and his academic work was part and parcel of his endeavour to be a national educator. Thus Man had of necessity to occupy the central part in his design of geography.

His activities for promoting the subject, in addition to his official duties, were innumerable. Under his guidance the Berlin Geographical Society became an important institution for the propagation of geographical knowledge in lectures and in its journal. Ritter contributed frequently himself.¹⁷ He gave public lectures at various other societies,¹⁸ he wrote many introductions to geographical works, and recommended the translation of English works into German; he did as much as he could to promote travel and exploration and communicated reports he received as soon as possible.

He too would have liked to go on some distant travels, he had experienced and knew the value of personal observation, but these his official duties would not permit. Nevertheless, he was no "armchair geographer". Regularly every summer he went on extensive study tours

and he came to know most of Europe intimately, but only once in Smyrna was he able to set foot on the soil of Asia.

The first edition of Ritter's *Erdkunde* had long been out of print and he prepared a second revised one on a much grander scale. Of this, the first volume (on Africa) appeared in 1822. In 1831 he realised that with the multiplicity of duties there was insufficient time left for this work and he shed as many as he could. From 1832 further volumes appeared at regular intervals, the last a few weeks before his death. But despite its enormous size, about 20,000 pages, it remained incomplete, with Asia unfinished and Europe not even touched.¹⁹ Space unfortunately does not permit an appreciation of this work; ²⁰ only two points can be raised, its title and its plan. What does Ritter mean by *Erdkunde*, or *General, Comparative Geography*? Plewe found the final answer only this year and it is as simple as it is convincing.

The explanation for the choice of title lies in its link with Pestalozzi's method of teaching, of which Ritter's geography, as stated by himself, was to be the exposition in a particular field. In this method three stages are distinguished; the first the acquisition of the facts, the second a general *comparison* of the material, and the third, the establishment of a general system (as it exists in nature). By its title Ritter wanted to indicate that it was to be a presentation at the second stage, omitting the *elementary, merely descriptive, geography*. Since the general comparison involves the integration of *all* the information existing about a place for all times, the work was bound to become as large as it did and such a plan was beyond his capacity. The third state, a *general geography*, could only arise as a result of this work and this is the reason why Ritter never published it. Although tragic that it remained incomplete, even from the human point of view, it is impressive enough. Its fate was to be praised, little read, and much misunderstood. The part on Asia, taken by itself, is probably the greatest contribution to the knowledge of the continent ever made by a single person.

Ritter was in good health almost to the last. In spring 1859 he went on a journey to Switzerland and northern Italy. After his return he attended Humboldt's funeral. The summer of that year was very hot and dry and he suffered from the heat. He fell ill the day after his eightieth birthday, became bedridden on the 16th of September, and died peacefully on the morning of the 28th of that month.

By the time he died he had outlived himself. He who had been a geographer esteemed as none before him had now been overtaken by the development of a science which saw its salvation in rationalistic analysis rather than in synthesis which had been his aim. Berlin, from whence the rays of his work had penetrated to the corners of the earth even saw, after H. Barth's early death in 1867, his chair remain vacant, and the continuity of development of geography in Germany was interrupted. When a new beginning was made it was at Vienna and Leipzig, and important as O. Peschel was, his attacks on Ritter were misguided and arose from ignorance of the latter's work. Unfortunately, they have coloured judgments of Ritter for fifty years or more. F. von Richthofen, clearly more attracted to Humboldt, nevertheless appreciated Ritter's importance. The occasion of the centenary of his birth resulted in a number of papers which initiated a new attitude towards him. The most

effective contribution in this respect was made by F. Ratzel, who knew what geography owed to Ritter. The *Anthropogeographie* builds directly on the foundation Ritter had left, and Ratzel himself and some of his pupils worked on topics connected with Ritter.

Alfred Hettner's concern with geographical methodology gave Ritter a prominent place in the history of the development of geographical thought.²¹ This, together with the vigorously developing human and cultural geography, resulted in greater interest in Germany and America,²² initiating from 1929, the 150th anniversary of his birth, modern Ritter research. Despite these efforts, and despite the fact that geography consciously and unconsciously has come very much nearer to Ritter's approach, the old prejudices which began to surround Ritter after his death are still more frequent than genuine knowledge of Ritter's work. The most serious charge still current is that his teleological views prejudiced the results of his research. No factual evidence for this exists and the charge has been refuted time and time again. H. J. Mackinder's statement of 1895 is as valid today as it was then, when he said in his presidential address to the Geography Section of the British Association: "Ritter's teleological views... do not affect the essence. It is easy to re-state each proposition in the most modern evolutionary terms."²³

Humboldt's belief in an orderly universe, a cosmos, and Ritter's teleology are different only in so far as to Ritter this cosmos was not merely a beautiful machine, but existed for a definite purpose. But this divine purpose is only the ultimate cause leaving open for research the entire field between that and the phenomenon itself.

Ritter ignores neither the laws of causality nor the free will of man. Nature is the challenge, but man has to make the decision. We are barely aware of it, but if everything with a teleological flavour had to be dismissed from present geography we would be much the poorer for it. The moment we look at physical nature as human habitat, speak about mineral resources (instead of minerals), or make value judgments about locations, we are in fact thinking teleologically.

To appreciate fully a genius like Ritter will probably never be possible, but we are now in a position to come somewhat closer to an understanding. We can see him as a humanist in a dual sense. A person to whom there was no nobler task than to contribute his share towards leading his fellow men to greater perfection; and a person to whom the earth as a wonderful organism, designed to be the home of man, was to be approached with humility. On these bases he built the imposing structure of his geography, the only metaphysics of format to which a geographer has ever risen.²⁴ We can no longer follow him into these heights, but we cannot but admire him and must be deeply grateful for having brought man, not only his body but his entire being, into geography. As Humboldt has been likened to Aristotle, a comparison with Plato is fitting for Carl Ritter.

²¹ G. Kramer, *Carl Ritter, ein Lebensbild*, 2 vols., Halle, 1864, 1870; 2nd edition (enlarged by additional letters of Ritter), Halle, 1875. W. L. Gage, *The life of Carl Ritter* New York; Edinburgh, London, 1867.

² H. Bögekamp, *Karl Ritter*, Berlin, 1800. Included in W. L. Gage's *Geographical studies by the late Professor Carl Ritter of Berlin*, Boston, 1863. A. Guyot, *Carl Ritter. Journal of the American Geographical Society*, 1860, 2 : 25-63.

W. Hoffmann, *Die Erdkunde im Lichte des Reiches Gottes*, Berlin 1860, (The address delivered at Ritter's grave). Karl Ritter, obituary by The President of the Royal Geographical Society, the Earl de Grey and Ripon. *Proc. of the Roy. Geog. Soc.*, 1860, 4 : 137 f. F. Marthe, Was bedeutet C. Ritter für die Geographie. *Zeitschrift der Ges. für Erdkunde zu Berlin*, 1879 : 374-400.

³ Zu Ritters 100 jährigem Geburtstag. Originally published in 1879, reprinted in his *Kleine Schriften*, vol. 1, München, Berlin, 1906 : 377-428. Also the article, Karl Ritter, in *Allgemeine Deutsche Biographie*, vol. 28, Leipzig, 1889 : 679-97.

⁴ R. Bitterling, Carl Ritter zum Gedächtnis. *Geographischer Anzeiger*, 1929, 30 : 233-42 ; H. Dörries, C. Ritter und die Entwicklung der Geographie in heutiger Beurteilung. *Die Naturwissenschaften*, 1929, 17 : 627-31. A number of papers by H. Schmitthenner : Carl Ritter und Goethe, *Geographische Zeitschrift*, 1937, 43 : 161-75 ; Studien über Carl Ritter, *Frankfurter Geographische Hefte*, 1951, 25, Heft 4 ; Carl Ritter in *Die Grossen Deutschen*, III, Berlin, 1956 : 189-200. A brief biography is contained in G. R. Crone, *Modern Geographers*, London, 1951 : 16-21. The centenary studies were introduced by H. Beck, Carl Ritter Forschungen, *Erdkunde*, 1956, 227-33, where a comprehensive bibliography of Carl Ritter studies may be found ; this is supplemented in his article in the Carl Ritter Memorial Issue of *Die Erde*, 1959, 90, Heft 2 : 251-3 ; other papers in this issue are : E. Plewe, Carl Ritter, Hinweise und Versuche zu einer Deutung seiner Entwicklung, 98-166 ; E. Kirsten, C. Ritters "Vorhalle europäischer Völkergeschichten", 167-83 ; E. Lehmann, Carl Ritters kartographische Leistung, 184-222 ; W. Tichy, Carl Ritters Schriften zur Kunst, 223-29 ; H. Preuss, Johann August Zeune in seinem Einfluss auf Carl Ritter, 230-39 ; H. Beck, Die Ritterforschungen Karl Simons, 241-51. All papers have summaries in English. There are further 3 pages with 6 of Ritter's field sketches (of which he must have made thousands). See also : E. Plewe, Carl Ritter. *Geographisches Taschenbuch*, 1958-59, Wiesbaden, 1958 : 501-3 ; C. Troll, Das Alexander von Humboldt - Carl Ritter - Gedächtnisjahr 1959, *Erdkunde*, 1959, 13 : 1-5 (with a colour print of Carl Begas' portrait of Ritter), and his Centenary Address, "The work of Alexander von Humboldt and Carl Ritter", at the York Meeting of the British Association for the Advancement of Science (to be published in the March 1960 issue of *Advancement of Science*). Two papers read at the German Geographers' Conference, Berlin, 1959 ; G. Pfeiffer, Humboldt, Ritter und die moderne Geographie, E. Plewe, Die historische Stellung Carl Ritters in der Geographie, will be published in *Verhandlungen des Deutschen Geographentages*, 32 (probably in 1961). The only bibliography of Ritter's publications is contained in O. Richter, *Der theologische Zug im Denken Carl Ritter*, Leipzig, 1905. Ritter manuscript material in the Staatsbibliothek in Berlin was destroyed in the war. There is, however, still unused manuscript material in the Guts Muths-Ritter Archiv in Quedlinburg and the existing letters have not yet been systematically collected and published.

⁵ E. Plewe, Untersuchungen über den Begriff der "Vergleichenden" Erdkunde und seine Anwendung in der neueren Geographie. *Zeitschrift der Gesellschaft für Erdkunde zu Berlin*, 1932, Ergänzungsheft 4 : 47.

⁶ *Europa, ein geographisch-historisch-statistisches Gemälde*. . . 2 vols., Frankfurt a.M., 1804 and 1807. A third volume was planned but not published.

⁷ *Sechs Karten von Europa über Produkte, physikalische Geographie und Bewohner dieses Erdtheils*. Schnepfenthal, 1806, 2nd ed. 1820. Also published in French as : *Denaix atlas physique de l'Europe*, Paris, 1829.

⁸ *Einige Bemerkungen bei Betrachtung des Handatlas über alle bekannten Länder des Erdbodens*, herausgegeben von Herrn Professor Heusinger im Herbst 1809. With an introduction by E. Plewe and English summary reprinted in *Erdkunde*, 1959, 13 : 83-8.

⁹ Ritter lent copies of the manuscript to a number of people ; to what extent the contents of J. W. M. Henning's book on methods of geographical teaching (*Leitfaden beim methodischen Unterricht in der Geographie*, Iferten, 1812), reflect Ritter's thought as claimed by Henning in the preface, is a matter of argument. Opinions so far have been in favour, see Schmitthenner, 1951, *op. cit.*, 48-52, where the preface is reprinted. Serious doubts were raised by Plewe, 1959, *op. cit.*, 113-16.

¹⁰ Posthumously published in two parts. Edited by H. A. Daniel. *Geschichte*

der *Erdkunde und der Entdeckungen*, Berlin, 1861, and *Allgemeine Geographie*, Berlin, 1862. The latter also in English translation by W. L. Gage, *Comparative Geography*, Edinburgh, London, 1865. (Also a U.S.A. edition). The book is dedicated to Alexander Keith Johnston, "the first who attempted to introduce the works of the great and excellent Ritter to the British Nation". Gage mentions also a translation of the first part, the History of geographical discovery, but it could not be ascertained whether it ever appeared. Plewe (1959, *op. cit.*, 116) is of the opinion that the actual lecture course was more advanced in its plan and more substantial than the published version. He thinks that H. Berghaus', *Die ersten Elemente der Erdbeschreibung*, Berlin, 1830, which is beyond doubt based on a lecture course by Ritter, in parts literally, gives a better idea of the concept (see Plewe, 1932, *op. cit.*, 59). Ritter's concept of "General Geography" is quite different from what we usually mean by it. For an exposition see H. Schmitthenner, *Die Allgemeine Erdkunde Ritters und dessen Stellung zur Geographia generalis. Münchner Geographische Hefte*, 1954, 4 : 29-32.

¹¹ Plewe, 1959, *op. cit.*, 127-29; different by Schmitthenner, 1951, *op. cit.*, 52-6. A direct literary result of his sojourn was his description of Kummer's relief model of the Mont Blanc area, according to H. Schmitthenner, 1951, *op. cit.*, 23, one of Ritter's most beautifully written works, worthy of inclusion amongst the geographical classics. Its title is *Geographisch-historisch-topographische Beschreibung zu K. W. Kummers Stereorama oder Relief des Montblanc-Gebirges und dessen nächster Umgebung*, Berlin, 1824.

¹² Its full title: *Die Erdkunde im Verhältnisz zur Natur und zur Geschichte des Menschen, oder allgemeine, vergleichende Geographie, als sichere Grundlage des Studiums und Unterrichts in physikalischen und historischen Wissenschaften*, 2 vols., Berlin, 1817, 1819. They deal with Africa and Asia; vol. 3, which was to have dealt with Europe, was not published.

¹³ At Frankfurt Ritter wrote what is frequently regarded as a purely historical work, his *Die Vorhalle europäischer Völkergeschichten vor Herodotus, um den Kaukasus und an den Gestaden des Pontus*, Berlin, 1820. This was meant to lead over from the Asia volume of the *Erdkunde* to that on Europe.

¹⁴ According to Gage, his lecture courses were on the following topics: Comparative geography, Europe, Greece, Geography and ethnography of Asia, Palestine, Sinaitic Peninsula, Africa, History of geography, History of discovery, Arctic and Antarctic expeditions; the first two were given most frequently. In addition to his General geography, his lecture course *Europa*, (edited by H. A. Daniel, Berlin, 1863), was also published. It again could not be established whether this appeared in an English translation by Gage, who wrote that he was preparing one.

¹⁵ Ritter wrote introductions to works by v. Roon and v. Moltke.

¹⁶ The most important of his Academy papers, including what is probably his most important paper of all, The historical element in geography (1833), together with the introduction to the *Erdkunde* (written 1815), were republished as a pamphlet, *Einleitung zur allgemeinen, vergleichende Geographie*,... Berlin 1852. Gage brought out a translation of this under the title: *Geographical studies by the late Professor Carl Ritter of Berlin*, Boston, 1863.

¹⁷ See the volumes of the *Zeitschrift für Allgemeine Erdkunde*.

¹⁸ For instance a paper read to the Wissenschaftlicher Verein zu Berlin in 1842, *Die Colonisation von Neu-Seeland*, Berlin, 1842; also in translation *The Colonization of New Zealand*, London, 1842.

¹⁹ The title of the second edition and the introduction are identical to that of the first. The first volume is again devoted to Africa, the remaining volumes to Asia. The first volume was translated into French by E. Buret and F. Desor, published under the title *Géographie générale comparée ou Etude de la terre*,... 3 vols., Paris, 1835 and 1836. Editions of parts on Asia (8 vols) appeared in Russian, under the auspices of the Imperial Russian Geographical Society (St. Petersburg, 1859-95, 1867-73, 1874) translated by P. P. Semenov, G. N. Potanin, I. D. Chersky, G. G. v. Petts, V. V. Grigorev, N. V. Khanukov. The 14 vols. dealing with Palestine and the Sinaitic Peninsula were condensed, translated and adopted for biblical studies by W. L. Gage, published under the title, *The comparative geography of Palestine and the Sinaitic Peninsula*, 4 vols., Edinburgh, 1866.

²⁰ The following section is based on Plewe, 1959, *Die Erde*, Memorial Issue,

op. cit., 122-4. See also Plewe's study on the meaning of Comparative geography, 1932, op. cit., esp. 30-46.

²¹ A. Hettner, *Die Geographie, ihre Geschichte, ihr Wesen und ihre Methoden*, Breslau, 1927, esp. 74-90, and a number of papers in *Geographische Zeitschrift*.

²² R. Hartshorne, The nature of geography according to its historical development. The classical period: Humboldt and Ritter, in: *The Nature of Geography, Annals Assoc. American Geographers*, 1939, 29, parts 3 and 4: 84-115. R. Hartshorne, The concept of geography as a science of space from Kant and Humboldt to Hettner, *Annals Assoc. American Geographers*, 1958, 48: 97-108.

²³ Report of the 65th Meeting of the British Association for the Advancement of Science, Ipswich, 1895, London, 1895, 743.

²⁴ E. Plewe, in *Randbemerkungen zur geographischen Methodik, Geographische Zeitschrift*, 1935, 41: 226-37, on page 233.

GLASGOW UNIVERSITY EXPEDITION TO VISDAL, NORWAY, 1959

Glasgow University Exploration Society, which has previously visited an Icelandic glacier-field, decided this year to invite the advice of and to offer their assistance to more scientifically interested members of the University. After consultation with Professor R. Miller and Mr W. V. Lewis of Cambridge, a group, including geographers, botanists and zoologists, spent August above the tree-line in the Northern Jotunheim. The party received generous support from the University of Glasgow, the Royal Geographical Society and the Carnegie Trust for the Universities of Scotland and various commercial bodies and was able to borrow surveying and other equipment from the University itself.

Although the detailed analysis of the results is uncompleted, it is already clear that the observations made on frost soils and solifluction terraces will provide valuable comparisons with similar features in upland Scotland which, though less easily recognised, are at least as significant because of our more intensive use of the sub-arctic zone. A careful excavation of a stone-polygon allowed the mechanism of frost heaving and its relation to the shallower water-table on flat areas to be studied in detail; the distortion of a juvenile podzol produced by this process at 6,000 feet contrasted with its action in a mineral soil at 7,000 feet and its virtual cessation at 4,500 feet. The relation of these changes to the ecological succession and the fauna were considered and soil thermal characteristics were measured in situ; soil samples were collected for later analysis. Tacheometric surveys were made of two areas of solifluction at 4,000 and 5,000 feet from which it is hoped to relate the dimensions of the terraces found to the overall slope characteristics of their sites. It is hoped later to be able to give an integrated description of the assemblage of facets which form these bare plateau — polygon terraces, stone-stripped glacia and linear or lenticular earthy terraces with their associated snow-patch water supplies.

C. A. Halstead.

A DESCRIPTION OF GLACIAL RETREAT FEATURES IN MID-NITHSDALE

JEFFREY C. STONE

THE small section of the Nith valley under consideration lies on the southern flank of the Southern Uplands (O.S. 1:25,000, Sheet NX98). In the north of the area, the land rises to over 800 feet to bleak moor which stretches north to Queensbury and the Lowther Hills. In the west, the divide between the Nith and the Cairn rises sharply to some 500 feet above the floor of the Nith valley, while the Water of Ae, a tributary of the Annan, crosses the north-east corner.

The solid geology may be sub-divided into two rock types. The broadening of the Nith valley (Fig. 1, 915860) is coincident with the northern limit of the Permian sandstone of the Dumfries basin. To the north and west of the Permian beds, purplish late-Silurian greywacke outcrops, with a characteristic north-east to south-west strike.

GLACIAL DEPOSITION FEATURES.

Kames: These ice-contact features, many of which are steep-sided in form, consist largely of stratified drift, and are frequently to be found on the lower valley slopes of the Nith. The two steep, ice-contact faces of these ridges suggest that they are of the crevasse-filling type in origin. Within the area examined, kames vary in height from a foot or two to over 50 feet. A few sections reveal the following characteristics:

1. The water laid nature of much of the material,
2. The range, and the frequent and sudden change in size of particles,
3. Frequent deformation of beds, particularly by faulting.

Kettles are found to be well-developed in association with the spread of kames. In depth, they are of the same order as the height of kames, but they vary in width from a few feet to over 100 yards. The steep sides of the kettles, together with the abruptness of the break of slope at the lip, suggest that sedimentation was not sufficient to completely envelop the dead blocks of ice. Moreover, the crests of kames are nowhere at a constant level for more than a few tens of yards. In one particularly remarkable area (Fig. 1, 900870) which clearly exhibits these features, kame and kettle topography is so finely developed and so well-preserved that it was necessary to resort to a scale of 1:10,560 to enable its accurate mapping.¹

It would seem probable that many kettles have since been destroyed by mass movement or post-glacial stream action. However, by observation of ice-contact faces, and with the evidence of drainage and peat spreads, the former existence of kettles, particularly larger kettles, can sometimes be determined, (see Figs. 1 and 2).

Detailed mapping of the kame and kettle topography makes it

apparent that there are no clearly defined crescentic trends, as described by J. K. Charlesworth.² It is, of course, feasible that much of the former kame and kettle topography has been destroyed by the post-glacial meanderings of the Nith which now has a flood plain of up to a mile in width, but the trend of the existing spread of kame and kettle topography is parallel with the river, and not in curves across the valley.

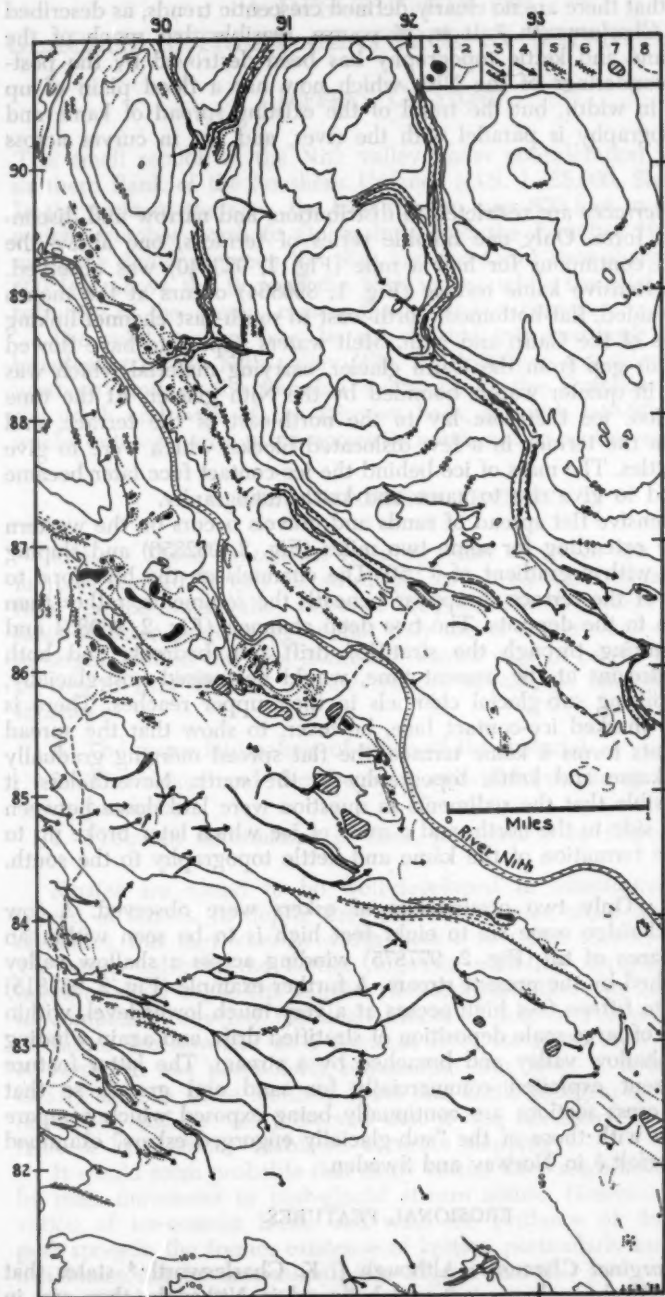
Kame terraces are restricted in distribution, and narrow and discontinuous in form. Only one notable series of terraces, one above the other, and continuous for half a mile (Fig. 1, 923840) was observed. A single extensive kame terrace (Fig. 1, 896864) occurs at the mouth of a steep-sided, flat-bottomed, north-west to south-east channel linking the valleys of the Cairn and Nith. Melt waters appear to have flowed through this gap from the Cairn glacier, carrying material which was deposited in quieter waters bounded by the Nith glacier. At the time of formation, ice therefore lay to the north-east of the terrace, and also within the terrace in a few dislocated blocks, which were to give way to kettles. The mass of ice behind the ice-contact face later became fragmented to give rise to kame and kettle topography.

An extensive flat spread of sands and gravels occurs on the western valley-side extending for some two miles (Fig. 2, 952856) and sloping south-east with a gradient of 1:50. The channels on the hill slope to the north of the terrace disappear beneath the sediments, rather than fan out on to the deposits. The two deep channels (Fig. 2, 960854 and 978840) cutting through the stratified drift into bedrock, and both carrying streams at the present time, would be incised post-glacially, though utilising sub-glacial channels in their upper reaches. There is no clearly marked ice-contact face, however, to show that the spread of sediments forms a kame terrace, the flat spread merging gradually into the kame and kettle topography to the south. Nevertheless, it seems feasible that the sediments in question were laid down between the valley side to the north, and a mass of ice which later broke up to permit the formation of the kame and kettle topography to the south.

Eskers: Only two occurrences of eskers were observed. A low steep-sided ridge some six to eight feet high is to be seen within an extensive area of till (Fig. 2, 977875) winding across a shallow valley and breached by the present stream. A further example (Fig. 2, 987815) some ten to fifteen feet high occurs at a very much lower level, within the region of large-scale deposition of stratified drift, and again winding across a shallow valley and breached by a stream. The latter feature is at present exploited commercially for sand and gravel, so that extensive cross sections are continually being exposed which compare favourably with those of the "sub-glacially engorged eskers" examined by Mannerfelt³ in Norway and Sweden.

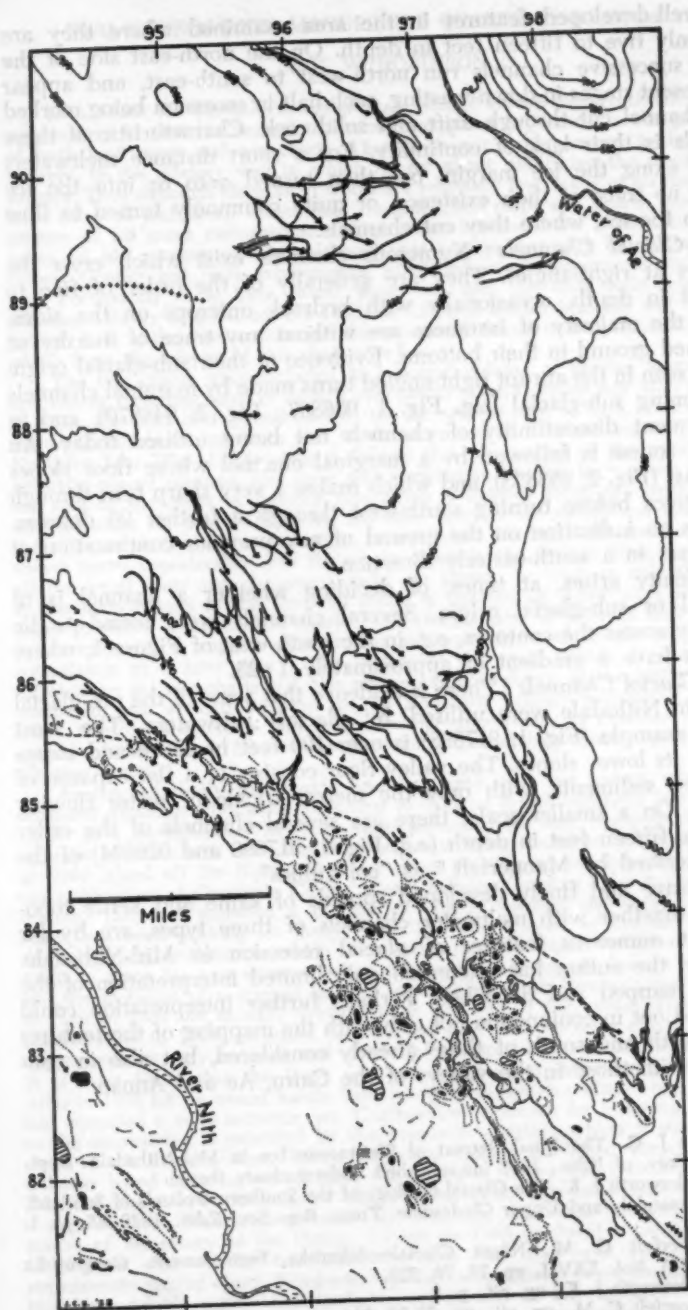
EROSIONAL FEATURES.

Ice Marginal Channels: Although J. K. Charlesworth⁴ states that ice marginal channels are not widely found in Nithsdale, they are, in



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Fig. 1. Glacial retreat features in Mid-Nithsdale 1. Kettles; 2. Kames; 3. Major meltwater channel (two rock walls); 4. Other meltwaters channels; 5. Kame terraces; 6. Eskers; 7. Deduced position of former kettles; 8. Northern extremity of Permian Sandstone.



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Fig. 2. Glacial retreat features in Mid-Nithsdale (for key see Fig. 1).

fact, well-developed features in the area examined where they are commonly five to fifteen feet in depth. On the north-east side of the valley, successive channels run north-west to south-east, and appear to represent stages in down-wasting, each halt in recession being marked by a channel cut through drift and solid rock. Characteristic of these channels is their lack of continuity. For a short distance meltwaters flowed along the ice margin, but then turned onto or into the ice leaving no trace of their existence, or quite commonly turned to flow beneath the ice, where they cut channels.

Sub-Glacial Channels: Numerous channels exist which cross the contours at right-angles. They are generally of the order of five to ten feet in depth, occasionally with bedrock outcrops on the sides, and in the majority of instances are without any trace of marshy or ill-drained ground in their bottoms. Evidence of their sub-glacial origin is to be seen in the abrupt right-angled turns made by marginal channels in becoming sub-glacial (e.g. Fig. 1, 936867; Fig. 2, 948870), and in the frequent discontinuity of channels not being utilised today. An unusual course is followed by a marginal channel whose floor slopes south-east (Fig. 2, 953853), and which makes a very sharp turn through 180 degrees before turning south-west through a further 90 degrees. There is no indication on the ground of any previous continuation of meltwaters in a south-easterly direction.

Difficulty arises, at times, of deciding whether a channel is of marginal or sub-glacial origin. Several channels were found to lie obliquely across the contours, e.g. in the south-west of Figure 1, where channels have a gradient of approximately 1:25.

Pro-Glacial Channels: There is evidence that some of the pre-glacial valleys in Nithsdale were utilised by glacial meltwaters. The most striking example (Fig. 1, 917898) is over 100 feet in depth and steep-sided in its lower slopes. The valley floor consists of a flat expanse of ill-drained sediments, with only the merest trickle of water flowing along it. On a smaller scale, there are several channels of the order of five to fifteen feet in depth (e.g. Fig. 1, 917893 and 926894) of the type described by Mannerfelt³ as "col gullies".

Extensive and finely developed spreads of kame and kettle topography, together with meltwater channels of three types, are by far the most numerous features of glacial recession in Mid-Nithsdale. However, the author has attempted only limited interpretation of the features mapped and described. Perhaps further interpretation could be carried out in conjunction not only with the mapping of the features to the north and south of those already considered, but also in conjunction with those in the valleys of the Cairn, Ae and Annan.

¹ Stone J. C., *The Final Retreat of Pleistocene Ice in Mid-Nithsdale*. Dept. of Geog., Univ. of Edin., 1957 (unpublished undergraduate thesis).

² Charlesworth J. K., *The Glacial Geology of the Southern Uplands of Scotland, West of Annandale and Upper Clydesdale*. *Trans. Roy. Soc. Edin.*, 1928, 55, pt. 1, pp. 13-14.

³ Mannerfelt C. M., *Några Glacialmorfologiska Formelement*. *Geografiska Annaler*. 1945, Vol. XXVII, pp. 73, 76, 225.

⁴ Charlesworth J. K., *op. cit.*, p. 8.

⁵ Mannerfelt C. M., *op. cit.*, pp. 56-59, 224.

TWO UNRECORDED MANUSCRIPT CHARTS BY JOHN ADAIR

A. H. W. ROBINSON

John Adair, the Scottish cartographer, is unique among the seventeenth century map-makers in that his exceptional talent was given expression in the production of both land maps and sea charts. That he is not better known is due, almost entirely, to the dilatory way in which he set about publishing the results of his surveys. Thus although his printed works are relatively few, many of his manuscripts have survived and these, rather than the published maps and charts, give a truer picture of his great cartographic ability. After his death his widow disposed of many of his manuscripts and although some were acquired by engravers like Robert Cooper and were subsequently published, many more were undoubtedly lost. Fortunately some have found their way into the map collections of the National Library of Scotland, the Bodleian Library, British Museum and Admiralty Library¹. It is the two manuscript charts recently found in the Admiralty Library which form the subject of this short note².

The two charts were included in a bound volume of printed Scottish maps and charts, including some of Adair's own charts taken from his *Sea Atlas* published in 1703. The first chart, numbered 61 on the reverse side, is on a relatively small scale and covers the northern part of the mainland of Scotland together with the Northern Isles (Fig. 1.). In style it follows the conventions of the period with a centrally placed compass rose from which radiating bearing lines cover the entire sea area of the chart. A latitude graduation is marked along the eastern border with divisions for every 5 minutes. No other borders are shown and this suggests that, like so many Adair manuscripts, it was never finished. The amount of detail shown varies considerably over the whole sheet. In the Orkney Isles, for example, all the small islets and dangerous rocks are shown. In contrast only the outline of the main islands in the Shetland group is inserted by Adair. It is known that Adair produced a larger-scale chart of the Orkney Isles as early as 1682 but there is no evidence to suggest that it was subsequently used in the smaller scale compilation at a later date³. The outline of the main islands in the group is different on the two charts and only one sounding is shown on the 1682 manuscript compared with at least a dozen on the Admiralty Library manuscript. It would seem, therefore, that Adair had had a further opportunity to examine the hydrography of the Orkney Isles in the intervening period between the preparation of the two charts.

As the Admiralty manuscript bears no date it is not known when it was compiled although other evidence points to it being drawn relatively late in Adair's career as a cartographer. In 1703, Adair published his only comprehensive work, an atlas of sea charts covering the east coast from Aberdeen southwards as far as Holy Island off the Northumberland coast. Possibly he had been stimulated by the publication of Greenville Collins' *Great Britains Coasting Pilot* in the previous decade. This had included a number of charts covering the same area where Adair had been working for many years. The poor quality of Collins' charts and the subsequent criticism to which they were subjected might well have influenced Adair to place his own surveys before the public. An unusual feature of the atlas was the inclusion of a general map of Scotland based on Nicolay's map published in Paris in 1583 but actually drawn on the occasion of the voyage of James V to the Hebrides in 1540. As might be expected with such an early chart, the coastal outline was not very accurate and clearly inferior to that shown on the Adair chart. It is most likely that the latter was not ready when Adair published his *Sea Atlas* in 1703 for he would hardly have accepted Nicolay's outline when he himself had compiled a more accurate one. Confirmatory evidence for assigning a late date to the manuscript is provided by the magnetic variation which is shown on the chart as 11 degrees west. When Greenville Collins published his chart of the Orkneys based on a survey of 1685, the variation shown was 7 degrees west. On Edmund Halley's world isogonic chart, dated 1700, this value had increased to 9 degrees west. Measurement made by Murdoch Mackenzie (Senior) during the course of his survey of the Orkney Islands in 1746 disclosed a value as high as 17 degrees west at that time. The variation had thus been increasing at the approximate rate of about 2 degrees west for every fifteen years. On this evidence, therefore, Adair's survey was probably carried out as late as 1715. This might explain why Hermann Moll, who was on intimate terms with Adair and had



Fig. 1. A manuscript chart of the north coast of Scotland with the Orkney and Shetland Isles compiled by John Adair, possibly as late as 1715.

engraved some of his maps, did not incorporate the survey in his map of *The North Part of Great Britain* published in 1714 although it provided a more accurate outline for both the Northern Isles and the north coast of Scotland.

The second manuscript chart, numbered 62 on the reverse, has no title. It covers the Firth of Clyde between the extremity of Bute and Ailsa Craig and is on a scale of almost half-an-inch to a mile (Fig. 2). In spite of its unfinished appearance it is not without interest. The atlas of five charts of the East Coast



Fig. 2. A manuscript chart of the Firth of Clyde by John Adair, *circa* 1700.

was intended to be the first part of a much larger work. The intricate and dangerous coast of the west presented an even greater challenge to the hydrographic surveyor and it had long been in Adair's mind to chart these waters and ultimately publish a second part to the atlas. In 1698 he was granted the princely sum of £600 for a West Coast survey but although he spent some time surveying, the results of his labours were never published during his lifetime. It was left to George Scott to publish a chart of the Clyde based on Adair in 1731, Robert Cooper acting as engraver. The Admiralty manuscript could therefore have been drawn while Adair was engaged on the West Coast survey at the turn of the century.

In the Bodleian Library there is a similar undated chart with the title "The Sea Mapped of the outward part of the Clyde betwixt Elsa and Garroch head containing bays of Aire and Irvine"⁴. Although covering the same area as the

Admiralty manuscript and clearly based on the same survey, the Bodleian chart has a more finished appearance. In place of the two lines at right angles indicating the cardinal points of the compass, a more elaborate rose with radiating rhumb lines is shown. The selection of soundings is largely the same but in the Bay of Ayr, a danger line is run around the shoaler water on the Bodleian copy. On land the topographic features are drawn in with greater care and more detail, the hill masses being portrayed in Adair's characteristic style. Unlike the Orkney charts, therefore, the two manuscripts of the Firth of Clyde were compiled at approximately the same time. That they were but two of a number of similar charts is shown by the entries in the Inventory of Maps, compiled after his death, where several West Coast charts are listed.

So many of Adair's manuscripts were copied by later cartographers that there is always the possibility that maps and charts bearing his name do not represent original compilations by Adair himself. The water mark on the two Admiralty manuscripts has the simple form IA. This is different from that on the manuscripts in the National Library of Scotland but as it is not known whether the latter are copies or originals, the test is inconclusive.

¹ A list of the Adair manuscripts together with an account of his career is given by H. R. Inglis, John Adair: an early map-maker and his work. *S.G.M.*, 1918, XXXIV (2): 60-66.

² They are not listed, for example in the *Early Maps of Scotland*, 2nd Edition, 1936.

³ The original is in the National Library of Scotland but is not listed in Inglis, *op. cit.*, although described by C. G. Cash, Manuscript Maps by Timothy Pont, Robert and James Gordon and John Adair in the Advocate Library, Edinburgh. *S.G.M.*, 1907, XXIII, 574-592.

⁴ Bodleian Library, Gough Maps, Scotland 7.

OIL-REFINERIES AND OIL-PIPELINES IN FRANCE SOME RECENT DEVELOPMENTS AND PROJECTS

BRIAN S. HOYLE

As in most other West European countries, the import of crude oil and the consumption of refined petroleum products in France have continued in recent years to expand at an increasing rate. Increasing demands have been made upon the oil-refining industry, and the total refining capacity of French oil-refineries has been so augmented that it now approximately equals the British total (see Table 1).

Years.	Total capacity metric tons per annum
1938	8,127,000
1947	3,960,000
1952	22,215,000
1956	30,435,000
1958	33,485,000

Table 1. Total refining capacity of French oil-refineries, 1938-1958 (selected years).¹

The activity of French oil-refineries and of the ports which serve them is likely to be considerably augmented in the near future by imports of crude oil from the Algerian Sahara, where developments in oil-prospecting and production have made rapid strides since 1957. This applies in particular to the Mediterranean port of Lavéra, developed since 1952 by the Marseilles port authorities to serve the

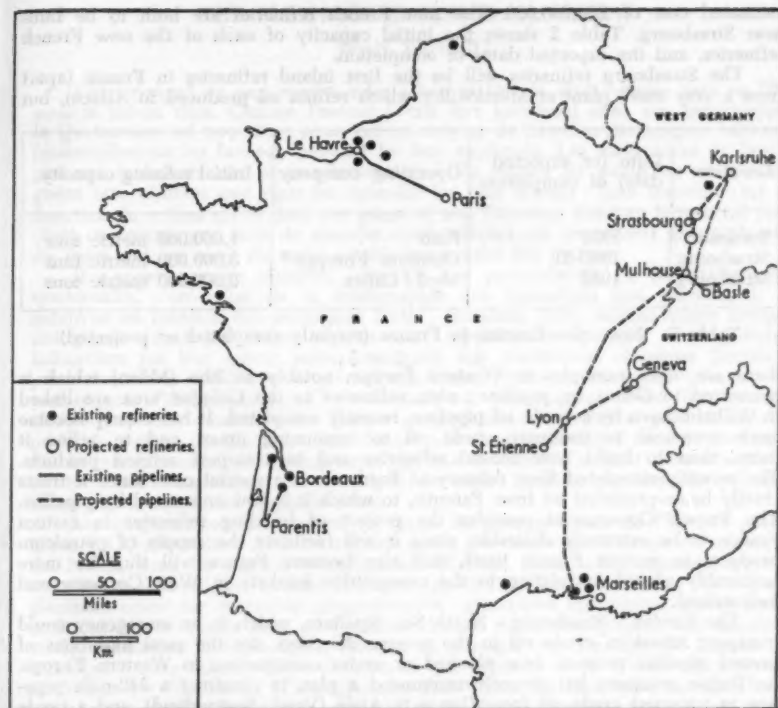


Fig. 1. Existing and projected oil-refineries and pipelines in France.

three refineries built at Lavéra and on the shores of the Etang de Berre. Small quantities of oil, comparable to those produced in the Nottinghamshire fields in Britain, have reached the refineries of the Etang de Berre region from northern Algeria for some years, but production there has now ceased. From the important Saharan field at Hassi Messaoud (the first oil from which arrived at Lavéra early in 1958) a 6-inch diameter pipeline leads to Touggourt, and from there the crude oil is taken by rail to the port of Philippeville. A larger, 24-inch diameter pipeline is to be constructed from the Edjeleh field, close to the Tunisian border, via Hassi Messaoud to the port of Bougie; a branch line is to be built to Algiers where a new oil-refinery is planned in the suburb of Maison Carré. This refinery, which will be completed in 1960, is to have an initial capacity of two million tons a year, which will be raised to four million tons by 1965. At present Algerian requirements are largely met by the refineries of the Etang de Berre region. It is expected that Algerian oil, now being produced at a rate of four million tons a year, will supplement and may even to some extent replace supplies of Middle Eastern oil in Western Europe.

Partly to distribute more economically increased supplies of crude oil from the Middle East, and partly to deal with the large expected tonnage of oil imports from Algeria, the construction of a crude oil pipeline from the port of Lavéra to eastern France and West Germany is proposed. The French Ministry of Industry and Commerce has recently recommended after a thorough investigation that Lavéra be selected as the only Mediterranean terminal of the pipeline, and it is learned that work will soon begin. The new 30-inch diameter pipeline will transport Middle Eastern and Algerian oil from Lavéra via the Rhône-Saône route to Strasbourg and Karlsruhe. Four new refineries, two in France and two in West Germany, will be served by the pipeline, which will be completed by 1963 at an

estimated cost of £36,000,000. The new French refineries are both to be built near Strasbourg. Table 2 shows the initial capacity of each of the new French refineries, and the expected dates of completion.

The Strasbourg refineries will be the first inland refineries in France (apart from a very small plant at Merckwiller which refines oil produced in Alsace), but

Location	Date (or expected date) of completion	Operating company	Initial refining capacity
Bordeaux	1959	Esso	1,600,000 metric tons
Strasbourg	1960-61	Omnum Français ²	3,000,000 metric tons
Strasbourg	1962	Shell / Caltex	3,000,000 metric tons

Table 2. New oil-refineries in France (recently completed or projected)

there are other examples in Western Europe, notably at Rho (Milan) which is connected to Genoa by pipeline; also, refineries in the Cologne area are linked to Wilhelmshavn by a crude oil pipeline, recently completed. It has clearly become more economic to transport crude oil to consuming areas, and to refine it there, than to build new coastal refineries and to transport refined products. The recently-completed Esso refinery at Bordeaux is a special case, since it treats chiefly home-produced oil from Parentis, to which it is now connected by pipeline. The French Government consider the project of building refineries in eastern France to be extremely desirable, since it will facilitate the supply of petroleum products to eastern France itself, and also because France will thus be more favourably placed in relation to the competitive markets in West Germany and Switzerland.

The Lavéra - Strasbourg - North Sea pipelines, which in an emergency could transport American crude oil in the reverse direction, are the most ambitious of several pipeline projects now planned or under construction in Western Europe. An Italian company has recently announced a plan to construct a 240-mile pipeline to transport crude oil from Genoa to Aigle (Vaud, Switzerland), and a crude oil pipeline from Rotterdam to the Ruhr is under construction.

¹ Source of statistics: Union des Chambres Syndicales de l'Industrie du Pétrole, Paris.

² This group of French companies originally proposed to build a similar refinery at Seurre, near Dijon, to serve Burgundy and eastern France. This project has been abandoned since the route of the Lavéra-Strasbourg pipeline has been changed from the original plan.

THE PLEISTOCENE PERIOD : A REVIEW

JEAN TRICART

Cet ouvrage* est une reprise, mise à jour et élargie, d'un volume paru en 1945 sous le même titre. Comme l'auteur l'écrit fort justement dans son introduction, le Quaternaire est trop court pour que les moyens de datation géologiques habituels (essentiellement les faunes), puissent lui être appliqués. Les survivances de faunes peuvent introduire des erreurs importantes. De même, les industries ne peuvent guère être utilisées que pour les épisodes les plus récents : bien souvent c'est en fonction du milieu qu'on date une pièce et non l'inverse. Aussi ce livre a-t-il pour objet de fournir une série de données systématiques sur les milieux géographiques du passé qui ont servi de cadre au développement des cultures.

Il s'ouvre par un chapitre consacré aux particularités de la stratigraphie quaternaire, c'est-à-dire de la stratigraphie des formations non marines. Il se subdivise en fonction des principaux faciès : moraines, loess, manifestations crypédologiques (dont les divers aspects sont rapidement expliqués avec quelques indications sur leur valeur paléoclimatique), sols d'altération chimique (limités à ceux des zones froide et tempérée), travertins, terrasses fluviales (classées en tectoniques, "thalassocratiques" = eustatiques, climatiques). Avec les terrasses climatiques sont examinées les formes proglaciaires. Un schéma général, valable pour les régions périglaciaires, est donné p.49 : commencement de l'accumulation dès le refroidissement du climat, arrêt dès que le climat s'adoucit avec une phase de transition caractérisée par le dépôt de loess, incision pendant les périodes tempérées à couverture végétale dense.

Les chapitres suivants passent en revue les grandes lignes de l'histoire géologique du Quaternaire : dans les régions ayant été englacées (Europe et Amérique du Nord), dans les régions périglaciaires (Europe centrale et orientale, pays à terrasses et à loess), en Grande Bretagne (pp.52-172). Le chapitre sur les régions glaciaires opère par ensembles géographiques : glaciations scandinave, alpine, nord-américaine. Une courte mise au point est donnée de la stratigraphie des moraines et des formations interglaciaires. Notons, au passage, que l'horizon de Rixdorf est considéré comme interstadiaire vistulien et que le stade de la Warthe est rapporté au Wurm (= Vistule I). L'interglaciaire Riss-Wurm est bien plus net au Danemark, mais, malheureusement, c'est le stade de la Warthe qui devient alors difficile à discerner, de sorte que la position de ce stade reste discutée. Très clairement, l'auteur souligne les questions non résolues dans cette région. Il donne ensuite quelques indications sommaires sur les moraines polonaises et russes. Pour les Alpes, les idées d'Ebert sont exposées à partir des conceptions de Penck et confrontées avec celles de Knauer, puis le problème de la subdivision du Wurm est brièvement évoqué. Un tableau résume l'ensemble. Une page est également consacrée à la Suisse, une autre aux terrasses du Rhin. La conclusion générale souligne l'incertitude qui règne au sujet des glaciations alpines et conseille de rejeter la nomenclature fondée sur elles. Elle tente une corrélation entre les diverses glaciations d'Europe et d'Amérique du Nord. Soulignons que l'auteur se rallie à trois phases dans le Wurm, ce qui n'est plus guère admis depuis une dizaine d'années.

Sur les terrasses périglaciaires, l'auteur rapporte longuement les résultats déjà anciens obtenus en Thuringe, région assez mal choisie du fait du blocage par la glace lors de l'Elster, et sur le Rhin inférieur au sujet duquel les travaux néerlandais sont ignorés. A propos des loess, il n'est question que de loess récent et de loess ancien. Un paragraphe reconstitue les relations entre loess, glaciations et terrasses et donne des indications sur les fluctuations paléoclimatiques en Allemagne.

Au sujet de la France du Nord, il n'est guère question que des travaux de l'Abbé Breuil et les coupes des environs de Rouen et de la vallée de la Somme sont les seules à être étudiées en détail, tant dans les loess que dans les terrasses.

La chronologie des formations quaternaires britanniques est, naturellement, discutée avec beaucoup de détails. Nous ne sommes pas compétents pour la critiquer, n'ayant aucune expérience de terrain de cette région. Les formations glaciaires et interglaciaires de l'East Anglia sont étudiées en premier et l'auteur conclut à leur analogie avec celles de l'Allemagne du Nord. Des aperçus très rapides sont donnés ensuite sur les autres moraines, puis on passe à l'étude détaillée du bassin de la Tamise, avec ses terrasses, ses faunes, ses raccords avec la série de niveaux marins devenus classiques dans les publications anglaises.

Le chapitre suivant est consacré aux causes astronomiques des fluctuations climatiques quaternaires. L'auteur cherche dans une théorie astronomique un moyen de datation absolue. Il reprend en détail les travaux de Milankovitch et adopte ses courbes. Ce seraient les variations de l'intensité solaire dues aux mécanismes admis par Milankovitch qui auraient causé les glaciations, qui, à leur tour, auraient refroidi progressivement le climat du voisinage, dévié la circulation cyclonale par formation d'anticyclones glaciaires, provoqué des vents dominants d'Est et de Nord-Est. Le grand rôle attribué dans les changements de climat aux glaciers eux-mêmes incite à admettre un décalage important entre les effets et les causes. Cependant, tous les faits ne peuvent être expliqués ainsi et il faut admettre, pour que les fluctuations de Milankovitch aient provoqué les glaciations, quelques effets supplémentaires : les migrations de l'axe des pôles et la dérive des continents sont écartées et il reste comme possibilités une diminution de la constante solaire, des modifications dans les courants océaniques et la théorie de Simpson sur les fluctuations de la constante solaire. L'Auteur préfère ne pas choisir.

Le chapitre suivant reprend la chronologie absolue du Quaternaire fondée sur la courbe de Milankovitch, et l'applique aux régions ayant subi la glaciation. Cette théorie devient alors le fil conducteur du reste de l'ouvrage et sera appliquée aux diverses autres régions du Globe : Méditerranée et Afrique orientale. Dans la première de ces régions l'étude est fondée avant tout sur les accumulations à l'intérieur des grottes. Les sites classiques de l'Apulie et de Monaco sont passés en revue, ainsi que les données fournies par les sondages au travers de la plaine de Versilia, et celles relatives aux Marais Pontins. De courts paragraphes sont consacrés en outre aux grottes du Mont Carmel, à Gibraltar, à la grotte de Castillo (près de Santander). L'Afrique est traitée de la même manière : au moyen de petits échantillons dispersés, connus par des publications déjà anciennes (oasis de Kharga, Sud-Ouest de l'Arabie, Kenya et Uganda, Tanganyika, Afrique du Sud). A partir de ces quelques faits épars, on revient à la courbe de Milankovitch.

L'Auteur aborde ensuite le problème fondamental des oscillations du niveau marin, propres à fournir une corrélation mondiale du Quaternaire. Il commence par rappeler les critères pouvant permettre de reconnaître les anciens niveaux marins. Il part de la chronologie méditerranéenne telle qu'elle a été établie par les auteurs anciens, notamment Depéret, conserve l'étage Milazzien, la prétendue opposition complète de faune entre Sicilien et Tyrrhénien. Il passe ensuite en revue les côtes françaises et, après deux mots sur l'Eemien, passe au littoral britannique, puis à ceux d'Afrique du Sud, d'Australie, des Etats-Unis, d'Amérique du Sud, pour lequel il utilise les données fournies par... Darwin. A partir de ces faits, il montre l'existence d'une alternance de régressions et de transgressions, liées aux oscillations des glaciers et les date par l'intermédiaire de la courbe de Milankovitch.

Le chapitre X contient des données sur l'évolution des faunes. Le chapitre XI certains "arguments supplémentaires" : vallée du Rhin moyen, plages marines de diverses régions, terrasses de la Tamise, loess et terrasses de Tchécoslovaquie.

Avouons-nous d'emblée que nous avons été déçu par cet ouvrage, très déçu ? Un peu comme celui qui ouvre une armoire et n'y trouve que de vieux vêtements, fripés et sentant le mois. Ce livre révèle cependant de remarquables qualités. La méthode y est solide, les conceptions larges et la seule critique que nous devions faire, de ce point de vue, porte sur le trop grand engouement de l'Auteur pour la théorie de Milankovitch. Nous sommes entièrement d'accord avec le principe de base de l'ouvrage : le Quaternaire ne s'étudie pas par un seul côté. Il se donne à nous seulement si nous savons le prendre en bloc, le regarder sous ses diverses faces à la fois, savoir établir les connections entre ordres de faits différents. Et bien souvent, c'est le gisement qui date la faune ou l'outil et non l'inverse.

Mais après cet enthousiasme initial, notre déception n'en a été que plus brutale. Ce livre eût été un bon livre, mais en 1940. Il ne tient aucun compte de tout ce qui a été découvert au cours des vingt dernières années. Or, c'est pendant ce temps que nous avons le plus appris sur le Quaternaire. On nous le présente comme un ouvrage nouveau et c'est une simple réimpression. Le seul chapitre qui n'aurait pu être écrit il y a vingt ans est le dernier. Lui seul contient des références postérieures à la guerre. Encore se limite-t-il aux problèmes déjà évoqués dans le cours de l'ouvrage. Pourquoi présenter un livre comme nouveau lorsqu'il s'agit seulement d'une réimpression à laquelle on a ajouté, sans vergogne, une sorte de débarras de trente pages à peine dans lequel on a déversé, sans ordre, quelques

fiches hâtives ? Cela ne vaut pas mieux qu'un simple post-scriptum griffonné au bas d'une lettre qu'on n'a pas eu le courage de refaire. Qu'on excuse notre sévérité : c'est l'intérêt de la science et le respect du lecteur qui nous la dicte. Celui qui achète un tel ouvrage sur le vu de sa date d'édition est trompé. Celui qui le lit en confiance est dupé. Il ignore les aspects modernes de la recherche sur le Quaternaire.

Donnons-en quelques preuves aux lecteurs de ce compte-rendu en énumérant quelques points essentiels dont cet ouvrage ne parle pas :

1) Dans l'identification des terrasses, aucune mention n'est faite des méthodes sédimentologiques. Or, ce sont elles qui permettent de reconnaître les diverses nappes alluviales et, dans bien des cas, d'obtenir des indications précieuses sur les conditions climatiques de leur mise en place. De même, les cryoturbations intraformationnelles, que l'on peut maintenant reconnaître à des critères très sûrs, sont complètement négligées. Tout l'énorme travail fait depuis vingt ans en France, en Allemagne, en Belgique, aux Pays-Bas, aux Etats-Unis sur ces questions est ignoré.

2) Les actions éoliennes ne sont traitées que pour les loess. Les éolisations, les sables dunaires sont complètement laissés sous silence. Bien mieux, la seule mention qui soit faite de dunes quaternaires, à propos de la Pologne, repose sur une interprétation erronée. On l'attribue aux vents anticycloniques d'Est qui auraient soufflé depuis la calotte de l'inlandsis scandinave. Or, les minutieuses études faites par les Polonais les Allemands les Belges et les Hollandais, ont montré qu'au Wurm comme de nos jours, les vents dominants étaient d'Ouest. Les mesures faites au Groënland par les Expéditions Polaires françaises ont permis de ramener à de très modestes proportions l'anticyclone glaciaire. Enfin, le mot de "nivéo-éolien" n'apparaît même pas. Or, ce type de dépôts revêt une très grande importance comme l'ont montré Edelman et Tavernier, entre autres.

3) Parmi les critères de datation, il n'est pas question de l'analyse pollinique. Or, elle existait déjà bien avant 1940, date à laquelle l'auteur a arrêté ses lectures. Elle est devenue l'un des moyens les plus employés et les plus efficaces pour établir l'âge de certains dépôts et pour identifier les paléoclimats. Des milliers de publications la concernant ont vu le jour. Elle est d'usage bien plus habituel que les faunes, dont il est uniquement question ici. Que dire, également, de l'absence totale de mention des méthodes radioactives, notamment du C_{14} , qui nous donne la meilleure chronologie absolue pour les périodes récentes et dont le parfait accord avec la chronologie fondée sur les varves a pu être démontré.

4) Un autre moyen de reconstitution des paléoclimats quaternaires, de première importance lui aussi, est également totalement oublié : la reconstitution des températures par l'étude de O_{18} , comme la pratique C. Emiliani, dont toutes les publications sont en anglais. L'examen des carottes prélevées sur les fonds marins par les Suédois a permis de reconstituer les variations de température sous des latitudes diverses et donne une stratigraphie détaillée des formations les plus récentes.

5) Au sujet de la stratigraphie de l'Allemagne du Nord et des Pays-Bas, question qui était déjà assez bien connue en 1939, les lacunes portent sur des points particuliers. Aucune mention n'est faite des traces d'une période froide découverte à Sylt sous les formations de l'Elster, ni des importants résultats obtenus par les Néerlandais et les Belges dans la plaine de la Mer du Nord. Les couches de Tegelen ne sont pas même mentionnées. Or, nous avons là une des séries les mieux connues de terrains quaternaires, une de celles qui sont fondamentales pour l'établissement d'une stratigraphie générale.

6) Des insuffisances bien plus grandes encore se relèvent à propos des pays qui étaient moins bien connus en 1939 et où on a travaillé beaucoup depuis, comme la France, la Pologne, l'URSS, l'Afrique du Nord, l'Afrique occidentale, le Congo Belge, l'Amérique du Sud. L'auteur ignore totalement les cartes paléoclimatiques détaillées qui ont été dressées de l'URSS et de la Pologne, les magnifiques recherches faites sur le périglaciaire de la Pologne et de l'Allemagne, qui a abouti à découvrir des phases froides anciennes, avec faune et flores interglaciaires dans le premier de ces pays et qui ont permis de préciser, dans le second, les modalités climatiques du Wurm et de la récession de la dernière glaciation. La récurrence de froid de la Nouvelle Toundra n'est nulle part citée. Rappelons-nous les cartes de manifestations périglaciaires des divers âges publiées pour la France, nos études sur les terrasses, celles de Bordes sur les loess, celles d'innombrables autres auteurs ? En Afrique centrale, les découvertes des Belges, montrant l'existence de

périodes sèches dans le bassin du Congo sont aussi ignorées que les reconstitutions des oscillations climatiques de l'A.O.F. faites par l'équipe de Strasbourg. Que dire de la référence à des observations anciennes et inexactes de Darwin en Amérique du Sud ? On a travaillé sur les plages anciennes du Brésil et une Commission des Aplanissements autour de l'Atlantique a remis, au Congrès de Rio, un volumineux rapport. Une commission de l'Inqua s'intéresse aussi aux rivages marins et n'est pas inactive.

7) La chronologie des étages marins quaternaires a été entièrement révisée. Au Maroc, une stratigraphie détaillée a été établie. Une corrélation très solide a été réalisée entre formations marines, paléosols et terrasses fluviales. Dans ce pays, on a pu montrer que les périodes glaciaires ont été favorables à la réalisation de vastes glacis, qui lors du retour à climats plus chauds, se sont recouverts de crôutes calcaires, sauf le dernier. Il n'est question ni des crôutes ni des glacis, ni des pluviaux sahariens, éléments cependant capitaux du Quaternaire des latitudes subtropicales. Les étages de Depérêt ont été révisés. G. Castany et F. Ottmann ont montré que le Milazzee n'existait pas, que la coupure entre Tyrrhénien et Calabrien était factice et liée à des questions de profondeur.

Bien d'autres ignorances aussi regrettables seraient à citer, hélas. Elles expliquent pourquoi nous avons dû, bien malgré nous, faire une critique aussi dure. Cet ouvrage est en retard de vingt ans et constitue, pour ses lecteurs, un abus de confiance.

* Zeuner, F. *The Pleistocene Period*. Pp. 447. 80 Figs. London : Hutchinson, 1959.

REVIEWS OF BOOKS

EUROPE

The Third Statistical Account of Scotland. Vol. 6. *The County of Dunbarton*. Edited by Margaret S. Dilke and A. A. Templeton. 8½×5½. Pp.333. 28 figs. 21 plates and folding map at back, Glasgow : Collins, 1959, 42s.

After a long delay following the production of 'pilot' volumes of the *Third Statistical Account*, the publication of county volumes has been resumed. For geographers, the general section—in this case comprising nearly half the book—gives a picture of the county as a whole not available in the earlier *Statistical Accounts*. It would, however, be unfair to the writers, if the reader sought in such an account a definitive contribution to regional geography. This is not the intention of the work. The *Third Statistical Accounts* are intended to provide comprehensive records of the counties—their burghs and parishes and of the people—their welfare and how they make their living. The present volume will provide material for the serious reader of history, sociology, geography and economics. Material there is indeed, and in plenty. But the difficulties which beset the editors and writers of the general account are apparent. Covering such a wide range of topics, the writers cannot present monographs in regional geography. Nor can we expect any one or two editors to be knowledgeable, or interested, as much in geology as in trade unions, as much in industry as in religious life. The counties themselves are now so intimately woven into the whole economic and social fabric of the country that, inevitably, they provide rather an artificial basis for such accounts.

Bearing these difficulties in mind it is easy to understand why certain sections of this book appear rather specialised and others equally generalised. The writers do not seem to have made up their minds for whom they were writing. For example, the general reader may be mystified by phrases such as "a relatively recent drainage pattern"—meaning one initiated at least 30 million years ago, and even those with an elementary knowledge of geology may find irritating the

reference to the faulted Coal Measure basin as a set of saucers "chipped, cracked or broken". Elsewhere there are apparent misconceptions. For example, it appears that the writers assume that all Trade Unions branches are affiliated to Trades Councils and, therefore, that membership of Trades Councils is a measure of membership of Trades Unions. If this is in fact the case in Dunbartonshire it is worthy of special comment. On page 44, it is stated that after the American Civil War ships "came to dominate industrial Dunbartonshire". In fact until the eighties, textile industries provided employment for nearly three times as many workers as did shipbuilding and continued to play a very prominent part until the First World War, as the figures on page 90 show.

However, when so much material of such diverse kinds has to be crammed into such small space, it would be surprising if anomalies did not occur. The rather indigestible style of some sections, with many short, note-like sentences, is probably to be explained in the same way, and on the whole the writers are to be congratulated on providing so much material, rather than criticised for excessive condensation. From what other source could one expect to get information on topics so widely separated as abattoirs and youth hostels, adding machines and yachting. Geographers, in particular, will be grateful for an excellent, up-to-date account of farming and forestry in a county which includes both Highlands and Lowlands and they should find useful the details of the spectacular rise of Clydebank. On the other hand, in an industrial county it is rather disappointing to find so little examination of industry.

The geographer will be especially pleased to find that the book is furnished with an excellent map—a special version of Bartholomews' Half-Inch map, in two colours—to show clearly the physical features and place names, and also the parish and county boundaries. Moreover the map is properly inserted so that it may be unfolded and consulted without any part being obscured by the pages of the book. Some of the black and white illustrations are less fortunate: they are seldom referred to in the text and so are difficult to understand (see, for instance, Fig. 16). Some are 'fussy', the symbols being difficult to distinguish (e.g. Fig. 15), and all are surrounded by a black line of quite unnecessary thickness. There are some excellent half-tone photographs and a substantial index that will be of value to those for whom this book will be an essential work of reference for years to come. It provides for posterity an authoritative description of the life of a Scottish county in the mid-twentieth century.

H.A.M.

Ayrshire at the Time of Burns. Edited by John Strawhorn. 8½×5½. Pp.380. Frontispiece. 14 figures and separate set of reproductions of Armstrong's Map of Ayrshire, 1775, 1 : 63,360, in 6 sheets each 21.8×19.9. Kilmarnock : Ayrshire Archaeological and Natural History Society, 1959, 30s.

The bi-centenary of the birth of Robert Burns has been well-commemorated in literary circles but the Ayrshire Archaeological and Natural History Society have used the occasion to bring out a very interesting inventory of the county for the period 1755 to 1800. The book, together with a fine set of reproductions of Armstrong's Map of Ayrshire in 1775, will be of value to geographers seeking information about the condition of Ayrshire in particular and Scotland in general at the critical mid-eighteenth century period.

Inevitably the book, being a compilation of various articles, is not entirely satisfactory. Articles are collected together from a variety of sources such as J. H. G. Lebon's *The Beginnings of the Agrarian and Industrial Revolutions in Ayrshire*, from the *London Essays in Geography* while Galt's *Annals of the Parish* and the *Statistical Accounts of Scotland and County Agricultural Reports* are widely drawn upon. Omissions there are but the over-all picture of the county during this period of great change is quite well-shown.

The six-sheet map of the county compiled by Captain Armstrong in 1775 on a scale of one inch to one mile assists the portrayal of the view of Ayrshire and a large section of the book is devoted to what amounts to a classified index to this map. The reproduction of the sheets is very clear and has been done by photolithography by Bartholomews.

The book presentation could have been improved by the selection of a more pleasant type face especially in the titles and chapter headings and by the use

of a better quality of paper. The standard of the figures in the text is far from uniform and some are showing the effects of over-reduction.

I.A.G.K.

Géographie Universelle Larousse. Tome premier, L'Europe Peninsulaire. Ouvrage publié sous la direction de Pierre Deffontaines avec la collaboration de Mariel Jean-Brunhes Delamarre. 11 1/2 x 8 1/2. Pp. IX + 420. 14 colour relief maps, 74 black and white maps. 11 full colour photographs. Numerous diagrams, tables, etc., Paris: Librairie Larousse 1958, 7,570 Fr.

This magnificent production is literally an astonishing acquisition to our Library and we note with gratitude that it is an autograph copy inscribed "Hommage très cordial".

The sheer size of the volume is at first sight a little disconcerting but the reason is immediately apparent—the great wealth of large and often excellent photographs, many of them in colour, and the large number of maps and figures. Spiez on the frontispiece appears as beautiful as in reality it is, but this is only the first of many well-chosen illustrations. The photographs are not merely an interesting study in themselves, they are exciting. Certainly from the point of view of developing interest in our study amongst the reading public, the book has much to teach us, expensive though it may be. French technique in these days of cheap production and costly printing, appears quite outstanding.

It is a sobering thought that with television and the popularity of the colour photograph, standards are rising and we can now appeal to the eye only with the very best.

The maps are numerous and detailed, so much so that a good atlas is scarcely necessary. Some, however, appear both overcrowded and overburdened, especially the economic ones, and each gives the impression of a labour of love or a mine of information, rather than of a precise selective document.

Another aspect of French geography which should make us ponder, especially in Scotland, is that the book is clearly produced for a public more geographically minded than here. Few who are able to compare would doubt that geography in general enjoys a higher standing both in the schools and the universities in France. There, a brilliant school of geographers, writing from the beginning of the century, has had its effect on French thought and on the status of the subject. Could such an expensively produced volume succeed in this country?

Following long French precedent, the theme generally is the characterisation of each country and its regions. The personal attitudes—and capacity—of the various authors inevitably enter the text; a recent trend towards a more impersonal approach as being more scientific, could only too easily lead to a desert of statistical accuracy. The text is both variable in quality and interest. One reads with some discomfort of Britain's weaknesses, of the drab landscape of her industrial towns; then of her advantages and power—and our success would seem a trifle elusive.... The French writing on France, one feels, are perhaps less critical, yet it is an interesting discussion. Italy in a relatively short study, comes to life in a particularly vivid way, and one's comprehension of the peculiar national problems was deepened. Scandinavia, the first of the series, is not so convincing nor so critically analytical. But probably the impact of the chapters is also personal.

With so many writers covering so much ground, errors easily creep in, mispellings of our place names are the most obvious. In one neglected column, there were Dollarrog and Landringdod Wells. Scottish hydro-electricity is dismissed almost as an aside. Glasgow gets very short shrift as compared with Edinburgh (with its 700 *professeurs*), and incidentally, the only photograph of the Clyde is untitled and on the dust cover. But it would be most uncharitable to suggest that the work is marred throughout in this way.

In reading the text, it must be said at once that from the point of view of the general reader, some geographical training is taken for granted. This is not a matter of technical jargon, but some authors certainly assume a broader basis than that which is only too often provided by our schools. Marked differences occur, however; there is scarcely an allusion to the fascinating issue of the structure of the Alps, and yet orogenesis in the Apennines is discussed freely. The inference again is that the French as geographers are not ill-informed.

H.F.

Geological Excursion Guide to the Glasgow District. By D. A. Bassett. 8½×5½. Pp. XV + 104. 5 Plates and 16 Figures. Glasgow: The Geological Society of Glasgow, 1958, 7s.6d.

This guide to the geology of the Glasgow district is composed of a series of itineraries each of which, taking a day or half-a-day, is within easy reach of the city. The area covered by the twenty journeys is contained within the quarter-inch geological map of Scotland, sheet 14.

Dr Bassett has produced a carefully documented series of excursions which will be of value and interest to the local geologists and geographers as well as to those visiting the city. Each route is painstakingly described and fully referenced both with regard to maps required and the works already published relevant to the itinerary. Some idea of the careful attention to detail can be gained from the inclusion, in the Glasgow City excursion, of a description of the stone used in constructing various buildings and even of the stone employed in the pedestal of one of the city's statues!

Maps of almost every itinerary are included and these have been carefully drawn and well-presented. It is perhaps a pity that, despite the obvious difficulty, no map of the geology of the city area itself is provided. In this respect also, at least for visitors, a map of the area showing the various itineraries laid out together would have been helpful.

Basically however the book is very satisfactory and it continues the tradition of well-written and authoritative works which have characterised the publications of the Geological Society of Glasgow in the past. It will be found in the pocket of many professional and amateur geologists, in whose ranks number many geographers, tramping Glasgow's country.

I.A.G.K.

Scotland before History. An Essay by Stuart Piggot with Illustrations by Keith Henderson. 5½×8½. Pp. VIII + 112. Edinburgh: Thomas Nelson & Sons, 1958, 15s.

This slim volume, elegantly written, with line drawings to illustrate and even reinforce the meaning of the text, makes both an absorbing introduction to Scottish prehistory for the general reader, and an illuminating summary for the expert. What is perhaps the most attractive aspect is the complete absence of fogging detail and technical problems, with, however, a clear indication of the immense complexity of the subject; and still there has been found space to discuss and reflect on general matters and technology. Would that more authors could achieve so much in these days of immensely long and overburdened texts. One does rather regret the omission of any bibliography. Geographically, the author shows his concern and interest in the land as it was, but it is a little disconcerting to find in such a human study a determinist attitude made so clear on page 3 in ".... settlement and diffusion are almost inevitably determined by such natural factors as harbours, forests and rivers". Perhaps, too, less attention to the significance of routes and more to the advantages and problems of the regions of Scotland, would have been welcome. However, we must assure Professor Piggott that his essay is a most valuable addition to our shelves. Incidentally, is not "Rigsa" on pages 24 and 25, a misprint for Risga?

H.F.

The Port Traffic of the Oslofjord Region. By Tore Ouren. Publications of the Norwegian School of Economics and Business Administration. Geographical Series, No. 6. 10½×7½. Pp.168. 53 figures. Bergen: J. W. Eides, Forlag, 1958.

This is a very thorough study of trade and transit by sea in an important corner of the North Sea. Despite the difficulty of collecting and sorting statistics, the author has been able to distinguish clearly, with the aid of several figures and tables, between "coastwise", "foreign coastwise", "European trade", and "overseas trade", terms which are approximately equivalent to the United Kingdom terms, "coasting trade", "home trade", "short sea trade" and "deep sea trade"

respectively. An informative note on the shortcomings of recent atlas maps purporting to show one or other aspect of sea transport and trade is succeeded by the author's main concern, an analysis of the dry and liquid cargoes coming and going within the region in 1951. A summary of the development of ideas on the "concept of Hinterland and Foreland" is useful, as is also the distinction made between "active" and "passive" transit traffic.

It is to be regretted that effective comparison between years is confined to only one port, since, in the pattern of regional trade, it is change that will interest the general reader as much as a full break-down of one year. For example, for Fredrikstad (where Hr Ouren made previous investigations) a major change in the nature of the import trade between 1939 and 1951 can be ascribed to the change from coal to oil fuels in steam production; also, while the volume of total exports from Fredrikstad in these years was approximately the same, there was a noticeable decline in the shipment of Norwegian lumber, formerly the most important single commodity group.

A.F.W.

Yugoslavia, Geographical Survey. By B. Z. Milojevic, translated by M. V. Isailovic. 9×6½. Pp.114. 8 Plates. 21 maps. 10 drawings and diagrams. One folded, coloured end-paper map. Beograd: Committee for Cultural Relations with Foreign Countries, 1959.

This is a useful little book dealing chapter by chapter with the main aspects of the geography of Yugoslavia. In addition to a folded coloured relief map and an appendix of photographs there are many black and white maps and diagrams in the text (including illustrations of land-forms and settlement types) and also a guide to the pronunciation of place-names. The translation has occasional lapses, however.

R.H.O.

The Island of Elba. A Report of Geographical Field Work carried out during April, 1958, by The Geographical Field Group. 9½×8. Pp.IV+113. 30 maps and diagrams. Department of Geography, Nottingham University, Duplicated, 1958.

Since before the War the Geographical Field Group has performed a notable service in arranging foreign excursions at a modest cost for those geography teachers or students who are prepared to attempt collaborative field-work, usually in places little frequented by the conventional tourist. A valuable collection of duplicated reports has thus accumulated over the years.

This latest report deals with a visit to the island of Elba in April, 1958, under the leadership of Dr I. Fuller of the Geography Department of Nottingham University, where the GFG was nurtured and with which it is still closely associated.

The island is seen as one of the smaller problem areas of Italy, although certainly the post-war expansion of the tourist industry may do something to counteract the lack of employment, which is related in part to the closure of the iron works. The report provides useful material for those interested in the geographical aspects of the economic problems of Italy, both general and local.

R.H.O.

Groundwork Geographies, The British Isles. By N. Jackson & P. Penn. 8½×5½. Pp.VII+230. Numerous maps and diagrams and photographs. London: George Philip & Son Ltd., 1959, 8s 6d.

Groundwork Geographies, Europe. By N. Jackson & P. Penn. 8½×5½. Pp.VI+200. Numerous maps and diagrams and photographs. London: George Philip & Son Ltd. 1959, 8s 6d.

Groundwork Geographies, The Southern Continents. By N. Jackson & P. Penn. 8½×5½. Pp.VII+228. Numerous maps and diagrams and photographs. London: George Philip & Son Ltd, 1959, 8s 6d.

Teachers looking for texts for Ordinary grade S.L.C. courses may find part of the answer in this series. Its main merits are careful limitation of facts, clear layout and thorough illustration by maps. About one-third of each volume is devoted to exercises to be worked by pupils; mainly by copying notes in which words must be inserted in blank spaces or by completing blank maps. At intervals a 'quiz' on recently learned material is included. In working through these exercises, pupils will be helped to fix facts but over a four-year course (the volume on *North America and Asia* is still to come) the sameness of the work must have a deadening effect. The more advanced *British Isles* and *Europe* volumes are less guilty of this and should be valuable in Third and Fourth Form Ordinary grade work. Chapters on Scotland as usual require much strengthening by teachers in Scottish schools. Photographs, though often good and well chosen, are small in size and number.

A.A.M.H.

AFRICA

A geography of Ghana. By E. A. Boetang. 6×8½. Pp.XVI+205. 46 figs. 41 plates. Cambridge University Press: London, 1959, 21s.

This is a handsomely produced textbook by a senior lecturer of the University College of Ghana. Its aim is to provide an authoritative text for senior schools and university entrance, the absence of which has long been felt throughout tropical Africa.

The overall impressions which it gives are of industrious collation, great concern for simplicity, precision of style, and neat presentation. In this respect, Mr Boetang has represented his country well: yet on closer examination and bearing in mind his intended audience, he by no means fulfils his every obligation. Which, for example, of the more technical publications should the young Ghanaian first take up, if he is to acquire the essential grammar of his subject? Which sheets of the Ghana Survey are worth close attention throughout his work? Where is he to obtain "the good up-to-date geological map of Ghana"? In other words a critical bibliography of sources is a *sine qua non* if this book is to be a sound introduction to university work.

In Parts I and II care is taken to explain West Africa's position in the hierarchy of natural regions but there are several occasions where brevity and oversimplification are likely to confuse the student and create difficulties for the teacher. Other occasions arise where extended treatment of elementary matters is bound to exasperate those in need of, and expecting, richer fare.

In Part III too much of the brief regional descriptions is little more than dilated topography; for example on the Accra plains the author hardly probes beyond Chapman's original subdivisions which have been superseded by recent field work.

The accompanying small-scale maps of the regions are well-drawn but there is only one (of the Volta Gorze) at a scale which succeeds in a portrayal of regional character. Simple cross-sections are perhaps offered in order to supply this deficit but as they stand at present, without structure or any attempt to transform them into regional transects, it is hard to know why they are there. The same can be said for the series of simplified village and town plans; once stated in the text such elementary morphology might be taken for granted, for what is more worthy of attention concerning these settlements is not just the plan but their site and its immediate approaches.

The end-section of photographs is fair but for teachers in this country more extended analyses of what is to be seen are necessary: what is more, official photographers are not geographers and too few of the pictures have been taken with this book in mind.

These criticisms alone must perforce detract in considerable measure from the book's merits and ought to be met in future editions.

R.W.C.

AMERICA

Industrial Evolution of Columbus, Ohio. By Henry L. Hunker. 6×9. Pp.XXV+260. 24 tables. 14 maps and diagrams. Bureau of Business Research: Ohio State University, Columbus, Ohio, U.S.A., 1953, \$4.00

Columbus, Ohio, is representative of that feature of the American scene, the State Capital, which has been established and located to meet the needs of administration but developed and expanded as a result of commercial and industrial activity.

This work presents an introspective account of this growth, particularly of the rise of the 204 industrial establishments located in Columbus in 1953, ranging from the giant North American Aviation Inc., which employs 17,000 workers, to the unusual Practical Burial Footwear Company employing only 29. The detail concerning such firms as the latter has led to an imbalanced account. It would appear to be of much greater significance to a study of the industrial evolution of a city to present reasons for changes, in time and space, in the industrial structure rather than to study small survivors which have little impact on the past or present industrial pattern.

Unless the reader is acquainted with the city and with the names of the surrounding counties the maps will not fully complement the text. A land use map of the city would have been a useful addition and the lack of one is a surprising omission. The photographic illustrations add little.

The importance of this book to the geographer lies in the insight it provides of the motivation of industrial location, past and present, in the U.S.A., and in the attack it makes on over-emphasis of the traditional factors in studies of the evolution of locational patterns.

A.B.C.

NEW ZEALAND

The Exploration of New Zealand. By W. G. McClymont. 8½×5½. Pp.VIII+125. 6 plates. 3 maps. 2nd edition. London: Oxford University Press, 1959, 21s.

The re-issue of this well-known book makes readily available the most complete survey of the history of the exploration of New Zealand. Though strictly factual and eschewing the romanticism which has afflicted many writings on this subject, it provides vivid glimpses of the hardships of the explorers' journeys and of the land into which they penetrated and of the curious juxtaposition of unknown country and land already settled which characterises such a young nation as New Zealand. It also includes much material which is otherwise very difficult of access. Nevertheless the work is chiefly of value for reference purpose, a role furthered by an excellent bibliography. For the ordinary reader—even those in New Zealand—the value of the book is diminished by the paucity of maps. It is virtually impossible to follow the various routes mentioned, especially those among the mountains of the South Island, on the tiny maps included in the text, or indeed on the average atlas map which is all that most readers are likely to possess.

E.L.E.

GENERAL

Rivers and Man. By Robert Brittain. Pp.288, 5½×8. 2 maps. 2 drawings. 13 plates. London: Longmans, Green & Co, Ltd., 1959, 21s.

Ascribing to rivers the principal role among the various environmental controls, which governed so strictly primitive man's activities, the author interrelates the growth and development of civilisation with the lessening of the rigidity of this control. In this the first of a proposed series by Mr Brittain devoted to this theme he traces this interrelationship *ab initio* to that point, in the tenth century A.D.,

at which man was on the threshold of a new era based upon the development of the power potential of rivers.

Drawing evidence and illustration from a wide range of sources the story is told lucidly, passages of descriptive writing often betraying the author's poetic bent. In the directness and certainty with which the history is written the style is reminiscent of Toynbee and in a work of this nature the use of bald statement rather than the examination of conflicting theories is most suitable. The onus is thus thrust upon the reader to accept or dispute and the critical reader should find the conflict stimulating. The geographer, for example, may see gross exaggeration of the political factors and disregard of the factors of the physical environment in the statement, applied, in this context, particularly to the Greek and Roman Civilisations, that "Water power.... could free men and women from a great deal of drudgery and that is precisely why the Empires rejected it."

In the past the Scots have tended to think of a river in its youth as a 'de'il' and as a 'skivvie' in its maturer stages. They have tried to avoid mention of, or dealings with, the 'de'ls' or if forced to sup have done so with a long spoon. Upon the 'skivvies' they have heaped task upon task and degradation upon degradation. In Scotland there are examples of rivers exploited in a multiplicity of ways but there is not one example of planned multiple purpose river development. At this time, when the River Flow Studies Committee of the R.S.G.S. is stimulating interest in the subject, this book is most welcome for bringing before a wider public some background to the growth of our attitudes towards rivers and also for the reminder it gives, that though the control upon man's activities be less than ever before, it still remains.

A.B.C.

The Challenge of Landscape, The development and practice of Keyline. By P. A. Yeomans, 9½×7½. Pp.271. 21 figs. and 32 Plates. Sydney: Keyline Publishing Pty Ltd, 1958.

This is an account, by an enthusiast, of his system of land management. "Keyline", is merely the efficient planned use of the soil and its mineral and biological content on the one hand and on the other of the climate. All else follows from an intelligent study of methods of conserving and building up these natural resources, augmenting them where appropriate, and avoiding waste, especially of water. In this country, we would call it good farming and land use, though doubtless the author would claim that Keyline involves more than that. From our point of view, the unusual and interesting feature of the plan is what elsewhere has been called "water harvesting". Where rainfall is low and evaporation high, water should never be wasted. In Keyline a system of water channels made in relation to both contour and landscape brings water to reservoirs of varying size and design where it is stored and later used for irrigation. Rainfall over an extensive area is thus channelled for subsequent use on a limited area from which more intensive production can be obtained than would come from the whole area without irrigation. Flooding and erosion are prevented and the heavy precipitation of a few days can be put to productive use over a long period.

A.R.W.

World Political Patterns. By L. M. Alexander. 9×6. Pp.XII+516. 101 maps and 17 tables. Chicago: Rand McNally & Co, 1957, 55s.

Contributions to Political Geography are always to be welcomed. Unfortunately, a promising title turns out to be a dismal catalogue of supposedly political-geographical facts. Little attention is given to the detailed problems of post-war Europe or the new Asia. The first aim of the work, to give an introduction to the study of political geography, is in part attained in an uninspiring way. The second aim, to present a geographical basis to international affairs, appears in a rather biased form. The author fails to develop satisfactorily his promising opening chapter on the nature of the study and leaves himself too little space to cast adequately his closing study on the changing nature of world political patterns. The mass of paper between these just does not sketch intelligibly the patterns

which we are supposed to see. Too much space is devoted to problems current in the interwar years and not nearly enough attention is given to contemporary problems. The chapters on Eastern Europe, the Soviet Union, and China are especially unsatisfactory in this respect. To list the gaps in the book would be tiresome: let it suffice to say they are many.

R.E.H.M.

MAPS AND ATLASES

Atlas Général, Larousse. 20×29 cms (7×11). 431 maps and insets. 183 plans. 250 statistical tables. 30 historical notes. index of 55,000 names. 456 pages. Paris: Librairie Larousse, 1959.

This new product of Larousse is typically elegant in its binding and in the tasteful arrangement of the excellently reproduced black and white photographs in the end papers. The preparation of the atlas has taken several years, as it was already in preparation at the time of the reviewer's visit to Larousse in November, 1955.

It is particularly interesting from two points of view (a) it includes historical maps; (b) the historical and economic maps are the work of the graduate geographers with post-graduate cartographic training of the Sorbonne. The general plan of the atlas follows the conventional arrangement of maps of the world, followed by Europe, France etc. The maps fall into five classes, physical, political, historical, economic and special (geology, climate, etc.).

In the general arrangement the maps of each region are shown in the sequence: physical, political, geological, historical and economic. The physical maps of continents and larger regions are conventional: hypsometric tints, reinforced by hill shading. The other general maps carry hill shading only. On these maps the colour bands for the international boundaries are slightly too heavy, creating too much contrast with white background. The nomenclature is French throughout.

Of particular interest are the ingenious economic maps prepared by Mr J. Barbier. He has been successful in the rather difficult task of visual representation of statistics; e.g. percentages of labour distribution, contrasting the local with the national figures. The use of the special three-dimensional symbols for production is very good. However, some overcrowding of these maps demands excessive study to extract the offered information. Nevertheless, the whole approach to the economic maps is refreshing; it lends support to the Sorbonne's decision to offer a special two years' post-graduate course in cartography to graduate geographers.

The generous index has an interesting addition in the form of larger scale plans of selected cities. The index is followed by over 50 pages of historical notes and 30 pages of statistics.

There could be two general improvements: greater legibility through less liberal use of bold type; and, greater accuracy through more thorough checking of the work. On the whole the atlas is an interesting one, and a valuable addition to any library.

J.J.K.

Ordnance Survey Quarter Inch (Fifth Series) Special Sheet — Wales and the Marches. 1: 250,000. 38½×32½. Ordnance Survey, Chessington, 1959. Paper flat 8s 6d. Paper folded 6s. Mounted and folded 8s 6d. Outline edition 3s 6d.

In recent years the Ordnance Survey have begun to contribute to the fund of knowledge of techniques of hill shading on small scale maps. The "Tourist" sheets of the 7th Series on a scale of 1: 63,360 are already well-known. Now, however, an attempt has been made to produce a sheet, showing mountainous country, on a scale of 1: 250,000. Basically this "Quarter Inch" map is in the style of the Fifth Series Quarter Inch maps but the treatment of relief is shown by a green tint on ground below 200 feet and by hill shading on land over 200 feet. Contours

in brown are retained and are placed at 200 feet intervals. A light source is assumed in the north-west and the areas of shadow are traced by a fine grey screen, where register incidentally varies considerably, while lit slopes are depicted in pale yellow. Crest areas are left white in the higher mountains. Generally the effect is good and at a glance it is easy to see where hills are, but difficult to distinguish relative heights. This is a common disadvantage of hill shading techniques. More particularly the hill shading is too heavy on a map of this scale and whereas in less hilly areas such as Anglesey and Pembroke the effect is pleasant, in many of the other areas the impression is confusing. Most confused of all perhaps is the area of 'the valleys' north of Cardiff. Here, in admittedly very difficult topography, narrow valleys are shaded and contoured but also carry roads, railways and strips of settlement. The fact that a black 'chequered' screen is used for towns instead of grey as in the 1:250,000 sheet of North Wales previously published in 1957, contributes to this very heavy appearance in these valley areas. Although unusual it might have been justified here to narrow the roads or remove the black road outline in these overcrowded places.

The presence of the entire Principality and its adjacent Marchland on one sheet is a great achievement and will prove very popular. A small point perhaps which might be improved is the layout and point size of the lettering in the key. The Survey produces such pleasant lettering elsewhere that this appears ill-chosen, being especially too small in the wording which explains the symbols.

The map is a welcome addition to all collections and should prove popular in many varied parts of the community. An Outline edition is also available.

I.A.G.K.

NEWBIGIN PRIZE

The Council of the Royal Scottish Geographical Society announce that the Newbigin Prize shall be £20 for the best essay, not exceeding 7,000 words on any subject relating to Scotland, suitable for publication in the *Scottish Geographical Magazine*. Two copies of essays for the prize should be submitted to The Secretary, The Royal Scottish Geographical Society, Synod Hall, Castle Terrace, Edinburgh 1, not later than 1st of September, 1960.

ROYAL SCOTTISH GEOGRAPHICAL SOCIETY

REPORT OF COUNCIL

SEVENTY-FIFTH SESSION, 1958-59

(For the Year 1st May, 1958 to 30th April, 1959)

The Council have the honour to submit the following Report :—

MEMBERSHIP

The changes during the Session are as follows :—

On the Roll at 1st May 1958	3174
New Members	732
	<hr/>
	3906
Deduct by Death	35
„ Resignation	523
	<hr/>
	558
On the Roll at 30th April 1959	<hr/>
	3348

The fluctuation in the different categories of Membership at the four centres of the Society is analysed thus :—

	April 1958	April 1959		April 1958	April 1959
<i>Edinburgh.</i>			<i>Glasgow.</i>		
Life	266	260	Life	32	33
Ordinary	1117	1237	Ordinary	1000	1004
Associate	30	31	Associate	18	21
Junior	40	56			
Corporate			Corporate		
(Schools)	16	14	(Schools)	28	27
<i>Aberdeen.</i>			<i>Dundee.</i>		
Life	9	9	Life	2	2
Ordinary	331	347	Ordinary	147	170
Associate	—	—	Associate	1	1
<i>Outside Areas</i>			<i>Honorary</i>		
<i>Members</i>	121	120	<i>Members</i>	16	16

MEDAL AWARDS

The Scottish Universities' Medals were awarded to :— Audrey M. B. Minchin, St Andrews University; Ian M. Scott, Aberdeen University; James D. W. McQueen, Glasgow University; Jeffrey C. Stone, Edinburgh University.

FELLOWSHIP OF THE SOCIETY

The Diploma of Fellowship was conferred upon : Douglas Guthrie, M.D., F.R.C.S.E., F.R.S.E., "in recognition of his Services to the Society as Lecturer and Chairman of Council, and of his wide travels in lesser-known Countries"; and an Professor Ronald Miller, M.A., PH.D., F.R.S.E., "for Services to Geography in the Academic Field, and to the Society as Convener of the Lecture Committee, Chairman of Glasgow Centre, and Honorary Editor of the Magazine".

1958 SUMMER TOURS

During the summer of 1958 120 members took part in the tour to Germany and Austria; 22 in the tour to Norway and 24 in the tour to the French Alps.

MEETINGS OF THE SOCIETY

The Society held forty-seven Meetings during the Session. In Edinburgh, seven Evening Lectures in the Usher Hall: ten Afternoon Lectures and one Evening Lecture in the Central Hall.

In Glasgow, seven Evening Lectures in the St Andrews (*Grand*) Hall: six Afternoon Lectures and one Evening Lecture in the St Andrews (*Berkeley*) Hall: one Childrens Hogmanay Film Show; one Lecture Luncheon and the Annual Summer Excursion.

In Aberdeen and Dundee: six Evening Lectures.

Lectures are currently listed in The Scottish Geographical Magazine.

THE SCOTTISH GEOGRAPHICAL MAGAZINE

Three issues each of 64 pages have appeared with the usual number of half-tones and line blocks. The Council gratefully acknowledge a grant towards the cost of production received from the Carnegie Trust. They also record their thanks to the contributors of original papers and reviews of books. The receipt of current publications from authors and publishers is likewise much appreciated.

LIBRARY AND MAP DEPARTMENT

Additions to Library:— 286 books, of which 127 were purchased; 30 pamphlets; 5 film strips; 6,000 maps and charts.

The Council thank those who have supported the Society with the presentation of books, maps and charts.

DONATION

The Council acknowledge with appreciation the gift from an anonymous donor of £500 in ordinary shares of a company.

THE SOCIETY'S REPRESENTATIVES

The following Members were appointed to represent the Society on the bodies named:—

Bruce Memorial Prize Committee—Sir James M. Wordie, C.B.E.; Patrick D. Baird.
Joint Committee for Anthropological Research and Training—Robert Kerr, O.B.E.
National Committee for Geography—Professor Andrew C. O'Dell.
National Trust for Scotland—Dr John Bartholomew, M.C., J.P.
Permanent Committee on Geographical Names—John C. Bartholomew.
Scottish National Memorial to David Livingstone—Lt Col. John Johnston, O.B.E.
National Institute of Oceanography—Professor Ronald Miller.

OBITUARY

The Council regret to record the deaths of William McC. Alexander, J. Allan Brown, George Dott, Robert Grant, Alexander Normand, Henry M. Paton, Professor James Ritchie, Rev. Archibald E. Robertson, John Watson and Sir Ernest MacLagan Wedderburn.

ROYAL SCOTTISH GEOGRAPHICAL SOCIETY REVENUE AND EXPENDITURE ACCOUNT Year to 30th April 1959

REVENUE

SUBSCRIPTIONS :

Ordinary	.....	£4,347
Schools Corporate	.....	89
Junior	.....	193
Arrears	.....	3
		<u>£4,632</u>

LIFE MEMBERSHIP FEES :

Proportion applicable to Revenue	.....	129
GOVERNMENT GRANT	.....	275
		<u>£3,036</u>
Total Ordinary Revenue	.....	£3,036

EXPENDITURE

MAGAZINE—Expenses of Publication :

Printing	.....	£1,033
Editor	.....	138
Illustrations	.....	106
Wrappers, Index, Miscellaneous	.....	68
Postages	.....	275
		<u>£1,620</u>
Less,		
Current Magazines sold	.....	£288
Advertisements	.....	124
Grant from the Carnegie Trust	.....	100
Sale of Reprints	.....	18
		<u>530</u>
		£1,090

ROOMS—UPKEEP OF :

Rent, Rates, Insurance	.....	£326
Cleaning and Repairs	.....	136
Heating and Lighting	.....	78
Equipment and Furnishings	.....	16
		<u>£556</u>

Less:

Donations	.....	38
		<u>518</u>
LECTURES	.....	£2,780
Less, Tickets sold	.....	1,344
		<u>1,436</u>

SALARIES AND HONORARIA

AUDIT FEES	.....	21
LIBRARY :		
Purchase of Books and Maps	.....	£415
Furnishings	.....	202
		<u>617</u>

GENERAL PRINTING

STATIONERY AND ACCOUNT BOOKS	.....	400
MEDALS	.....	183
POSTAGES AND TELEPHONE	.....	36
MISCELLANEOUS	.....	189
		<u>128</u>
		£6,012

EXCESS of Expenditure over Revenue brought down

PROVISION for Depreciations, etc.	.....	£976
SURPLUS FOR THE YEAR	.....	400
		<u>73</u>
		£1,449

EXCESS OF EXPENDITURE OVER REVENUE 976

£6,012

DIVIDENDS AND INTEREST 1,449

DEBIT FOR THE YEAR £1,449

ROYAL SCOTTISH GEOGRAPHICAL SOCIETY

PROCEEDINGS

Meeting of Council was held on Friday 13th November, 1959.

ANNUAL GENERAL MEETING

The Annual General Meeting was held in the Society's Rooms in Edinburgh on 22nd October, 1959, the Right Hon. The Earl of Wemyss and March, LL.D., President, in the Chair.

The Annual Report of Council and the Accounts for the Year to 30th April, 1959, were unanimously adopted.

The following were elected:—

Vice Presidents: J. B. Hamilton, James Glen Harley.

Vice Presidents serving on Council: J. Cameron Smail, Douglas Guthrie, Arthur W. Russell, Alexander Harisson, John Johnston, Miss I. W. Hutchison, Douglas A. Allan, James Glen Harley.

Members of Council: Dougal G. Andrew, C. M. Beckett, J. B. Black, Miss A. J. Climie, T. H. Gillespie, R. MacLagan Gorrie, Miss E. D. Graham, R. H. Guild, W. P. Haldane, Ross S. Higgins, Sydney H. Jones, R. K. Martin, Gordon Rae, Mrs Winifred Robertson, Miss C. P. Snodgrass.

The other Office Bearers were re-appointed.

75th ANNIVERSARY

EDINBURGH: To mark the occasion a Reception was held in the Music Hall, George Street, on October 22nd at 9 p.m. H.R.H. Prince Peter of Greece and Denmark was the principal guest.

DUNDEE: A dinner was held in the Queen's Hotel on Thursday 26th November, 1959. Guests included Dr Douglas Guthrie, M.D., F.R.E.S.E., F.R.S.E., F.R.S.G.S., Vice-President of the Society.

LECTURE SESSION 1959-60

The following lecturers were delivered:

EDINBURGH: *Usher Hall* - H. R. H. Prince Peter of Greece and Denmark, C.B., LL.D., on "Tibet before the Catastrophe", on 22nd October. Bernard Newman, F.R.S.A., Ch.L.H., on "Inside Russia Today", on 12th November. *Central Hall* - Miss Isobel W. Hutchison, LL.D., F.R.S.G.S., on "Corsica", on 28th October. Mrs. Jean Hunter Cowan on "African Safari", on 4th November. J. P. Cole, M.A., on "The Geography of World Problems", on 6th November. The Rev. G. A. Henderson, M.A., on "Among the Head-Hunting Tribes of Borneo", on 18th November.

GLASGOW: *St Andrew's (Grand) Hall* - H.R.H. Prince Peter of Greece and Denmark, C.B., LL.D., on "Tibet before the Catastrophe", on 23rd October. Bernard Newman, F.R.S.A., Ch.L.H., on "Inside Russia Today", on 11th November. *St Andrew's (Berkeley) Hall* - Miss Isobel W. Hutchison, LL.D., F.R.S.G.S., on "Corsica", on 29th October. The Rev. G. A. Henderson, M.A., on "Among the Head-Hunting Tribes of Borneo", on 19th November. Donald G. Moir, F.R.S.G.S., on "The 1959 R.S.G.S. Tours to Northern Spain and the Pyrenees", on 27th November.

ABERDEEN: *Y.M.C.A. Hall* - Dr C. G. M. Slessor, on "The Scottish East Greenland Expedition, 1958", on 19th October. Bernard Newman, F.R.S.A., Ch.L.H., on "Inside Russia Today", on 9th November.

DUNDEE: *Queen's College Hall* - Dr C. G. M. Slessor, on "The Scottish East Greenland Expedition, 1958", on 20th October. Bernard Newman, F.R.S.A., Ch.L.H., on "Inside Russia Today", on 10th November.

Scottish Castles

by W. DOUGLAS SIMPSON

Prominent among features of the Scottish landscape are the castles and tower houses of which there are more than one thousand in ruin or repair. This book describes the development of the castle in Scotland as a fortification, a dwelling-house, and an architectural achievement. Illustrated.

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Describes the work carried out by the Forestry Commission's research staff and that undertaken on their behalf by Universities and others during the year ended March 1958. Illustrated.

9s. 6d. (post 8d.)

Colonial Territories

A comprehensive overall picture of events and developments in British colonial and protected territories from April 1958 to March 1959.

(Cmnd. 780) 10s. 6d. (post 7d.)

East Africa High Commission

Annual Report on all aspects of the Commission's work during 1958.

Illustrated. 8s. (post 6d.)

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GEOGRAPHY APPOINTMENTS IN SCOTTISH UNIVERSITIES, 1959

ABERDEEN: *Lecturer.*— Mr A. Stewart Fraser, B.Sc., formerly assistant.

Assistant.— Mr James R. Coull, M.A. Col. P. R. Baird, formerly Special Lecturer in Arctic Studies has been appointed to MacGill University, Canada, and Mr William Kirk as Senior Lecturer to the University of Leicester.

EDINBURGH: *Visiting Lecturer* (1959-60).— Mr A. M. Taylor, A.M., D. Phil.

Assistant.— Mr G. Humphrys, B.Sc., M.A.

Professor J. Wreford Watson, M.A., Ph.D., F.R.S.C., has been appointed Visiting Professor of Geography, Queen's University, Kingston, Ontario, Canada for the Session 1959-60. Dr R. H. Osborne, formerly lecturer, has been appointed lecturer in the University of Nottingham.

DUNDEE: Mr R. J. Rice, formerly assistant, has been appointed Assistant Lecturer in the University of Leicester.

GLASGOW: *Assistant.*— Mr Allan F. Williams, B.A. formerly temporary assistant in the University of Birmingham. Mr I. A. G. Kinniburgh, formerly Cartographer, has joined the firm of John Bartholomew & Son Ltd., Edinburgh.

ST ANDREW'S: *Assistant.*— Mr Graeme W. Whittington, M.A., Ph.D.

CONTRIBUTORS TO S.G.M. Vol. 75 (3), December, 1959

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Cadet in the Provincial Administration
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